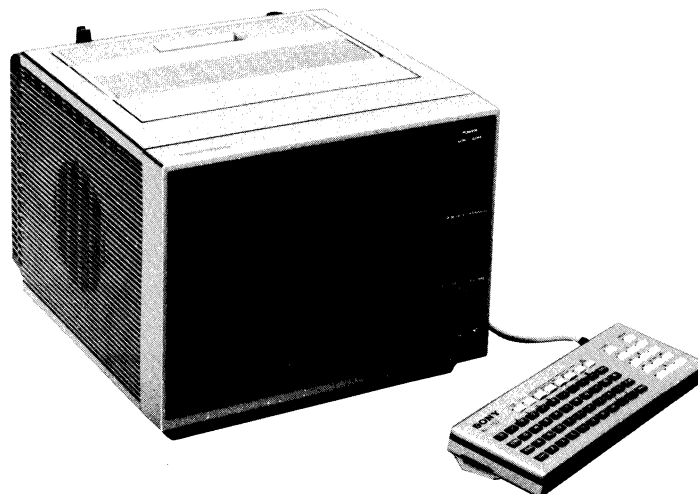


# KTX-9000G

## KI-102

## SERVICE MANUAL

Chassis No. SSC-458A-A



October, 1982

Also refer to Adjustment manual.

### SPECIFICATIONS

Picture tube	Trinitron "super fine pitch" color picture tube, about 23 cm (measured diagonally) Deflection 90° Without line skip Videotex German Federal Postal Service D-1200S	Power draw	38 watts
Scanning		Dimensions	Approx 261x236x326.5 mm (W/H/D)
Application		Weight	Approx 7 kg (15 lb 7 oz)
Modem		Available accessories:	Keyboard KI-103G Video graphic printer UP-101UB Connecting cable RK-133 (7-pin DIN on 5-pin and mini-plug) Connecting cable RK-137 (7-pin DIN on 3 mini-plugs) Video cable VK-100 (8-pin DIN on 7-pin DIN) Serial graphic printer SMI-7020G Keyboard extension cable RK-138
Inputs/Outputs	Keyboard input: 6-pin DIN KI-102 (delivery scope) KI-103G (ordering) Tape memory input/output: 7-pin DIN Printer: Output: 8-pin DIN		
Power supply	180 V to 260 V AC, 50/60 Hz		


We reserve the right to make alterations for the sake of technical progress.



TRINITRON® COLOUR  
VIEWDATA TERMINAL  
**SONY®**


CTV

**SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY SHADING AND  MARK ON THE SCHEMATIC DIAGRAMS ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THE SERVICE MANUAL.

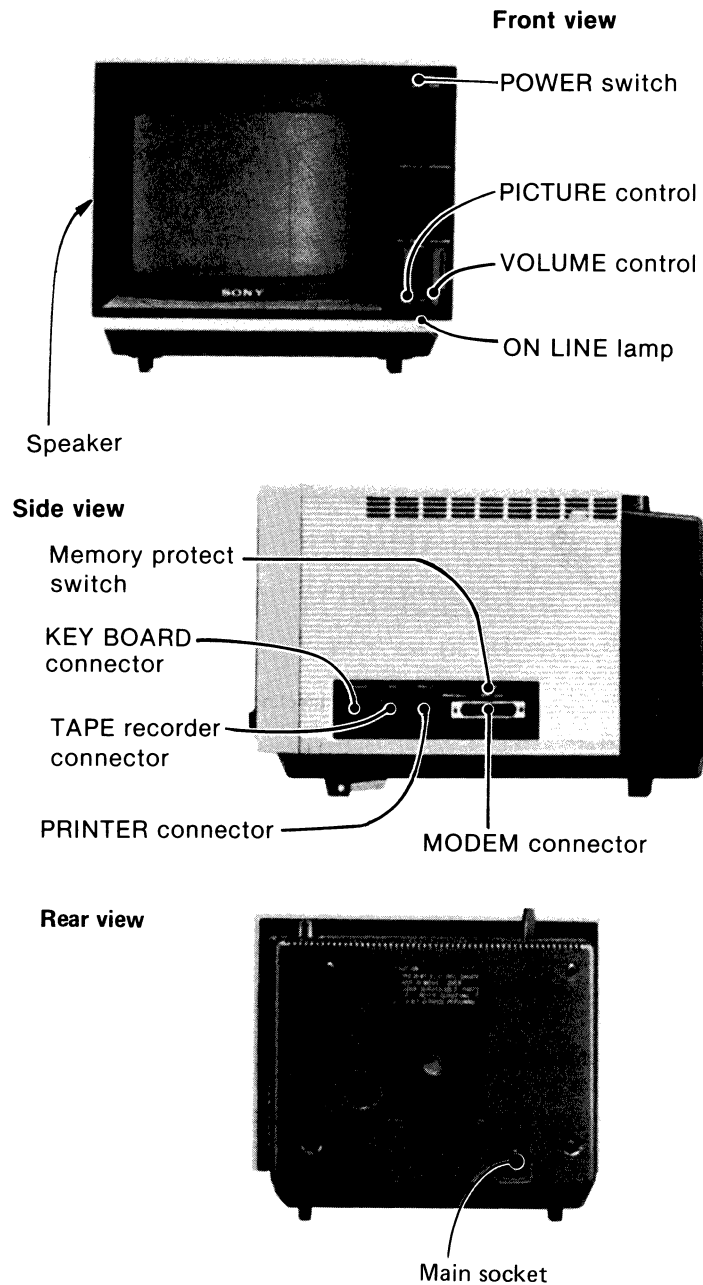
CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THE SERVICE MANUAL PUBLISHED BY SONY. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

**SICHERHEITSHINWEIS FÜR KOMPONENTEN**

IN DEN SCHALTBILDERN SCHRAFFIERT UND MIT DER  -MARKE EINGEZEICHNETE KOMPONENTEN SIND FÜR DIE BETRIEBSSICHERHEIT KRITISCH. DIESE KOMPONENTEN SIND DURCH SOLCHE SONY TEILE ZU ERSETZEN, DEREN TEILNUMMERN IN DEM VON SONY HERAUSGEGEBENEN WARTUNGSHANDBUCH ANGEZEIGT SIND. AUF FÜR DIE BETRIEBSSICHERHEIT KRITISCHE SCHALTUNGSEINSTELLUNGEN WIRD IN DEM HANDBUCH HINGEWIESEN. BEFOLGEN SIE DIESE ANWEISUNGEN STETS, WENN KRITISCHE KOMPONENTEN AUSGEWECHSELT WERDEN ODER VERDACHT AUF FUNKTIONSTÖRUNGEN BESTEHT.

## SECTION 1 GENERAL

### 1-1. LOCATION AND FUNCTION OF PARTS AND CONTROLS

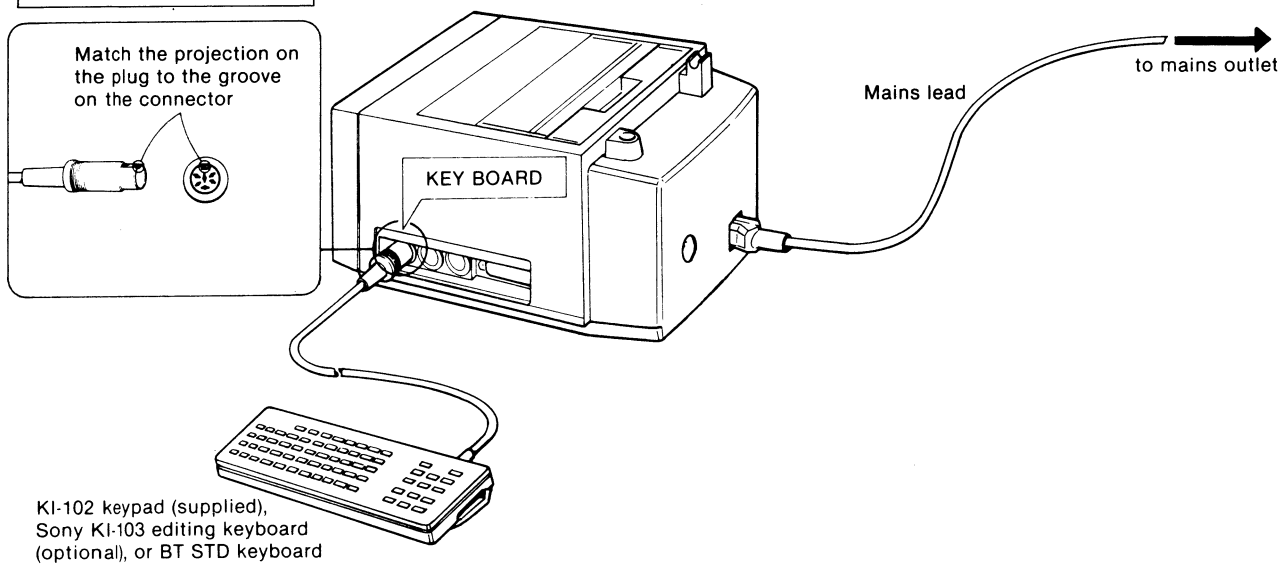


## 1-2. CONNECTIONS

These connections should be made with the POWER switch turned off.

For each type of connection, please read the corresponding instructions.

### FOR BASIC OPERATION

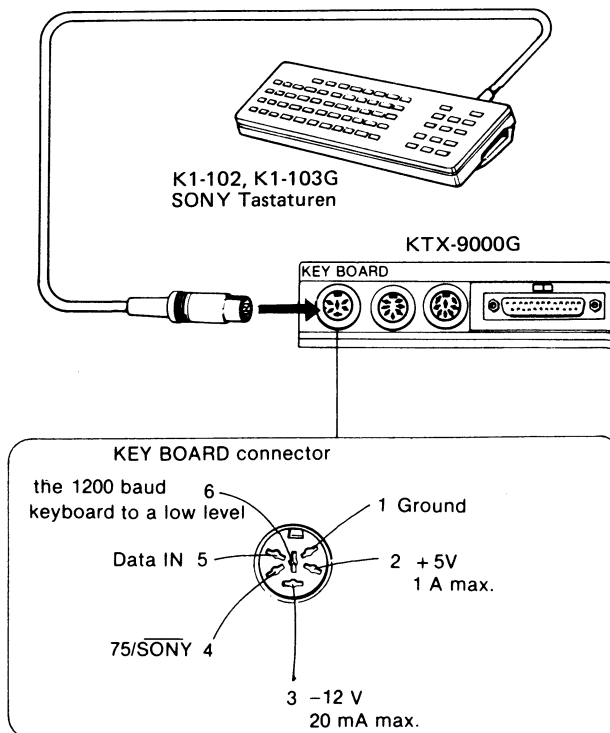


### Connecting the keypad or keyboard

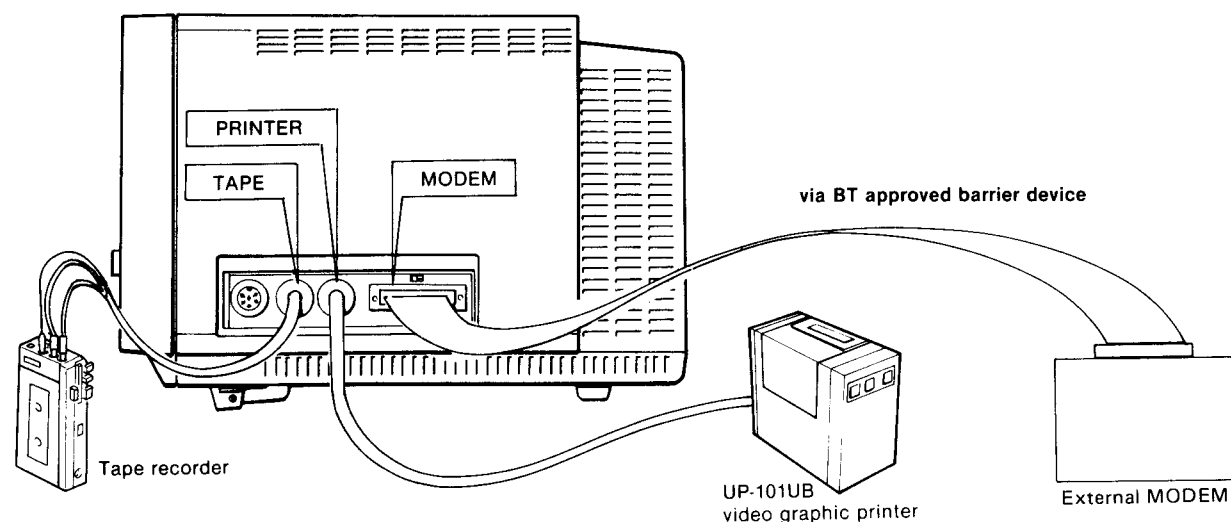
Connect the supplied KI-102 keypad, the KI-103 keyboard or the BT STD keyboard as follows.

### Mains supply

This terminal operates on 180–260 V ac. Connect the mains lead to suitable mains outlets.

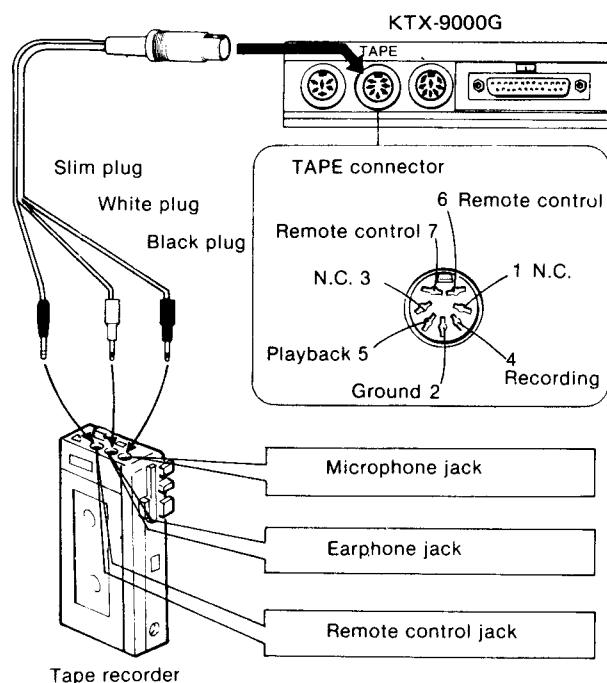


## FOR ADDITIONAL OPERATION



### Connecting a tape recorder

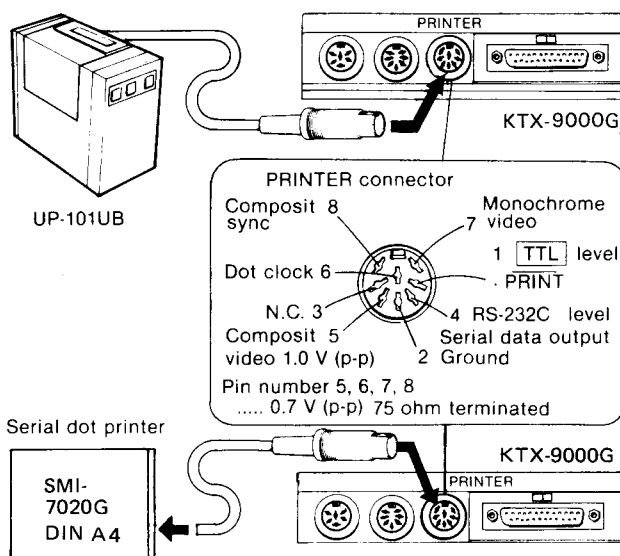
A tape recorder will enable you to record pages of information from the database for viewing at your convenience in the off-line or the on-line mode. We recommend that you use a tape recorder equipped with a remote control special minijack, an earphone jack, and a microphone jack. For the connection, use the optional RK-137 connecting cord (7-pin DIN to 3 miniplugs).



For the connection of a tape recorder equipped with a remote control special minijack and a REC/PB connector, use the optional RK-133 connecting cord (7-pin DIN to special miniplug and 5-pin DIN).

### Connecting the printer

This terminal allows connection of a Sony UP-101UB video graphic printer, a British Telecom Standard printer, or a Sony SMI-7020UB serial dot impact printer to print out a hard copy of the displayed page.



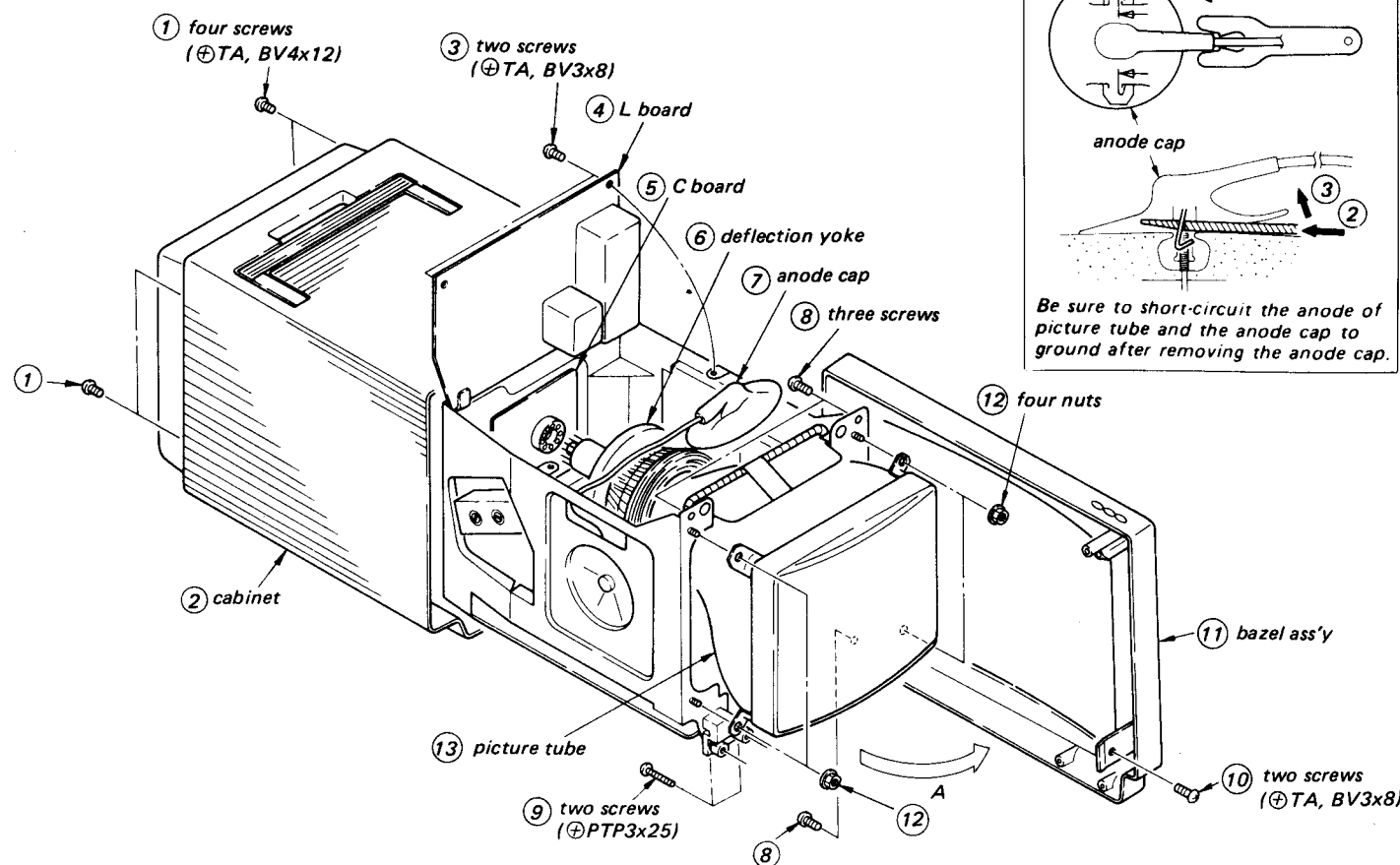
### Connecting the MODEM

When you connect the external MODEM via BT approved barrier device, use the connector to suit the following terminals.

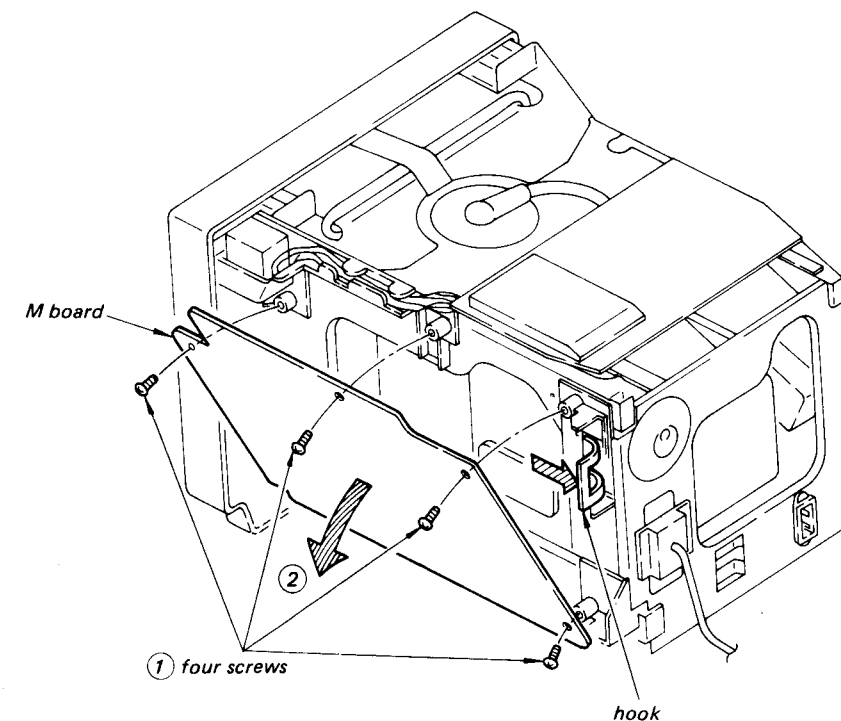
Pin number	name	CCITT-equivalent
14(2)	Transmitted data	103
3	Received data	104
7	Signal ground common return	102
8	Received line signal detector	109
20	Data terminal ready	108
6	Data set ready	107

## SECTION 2 DISASSEMBLY

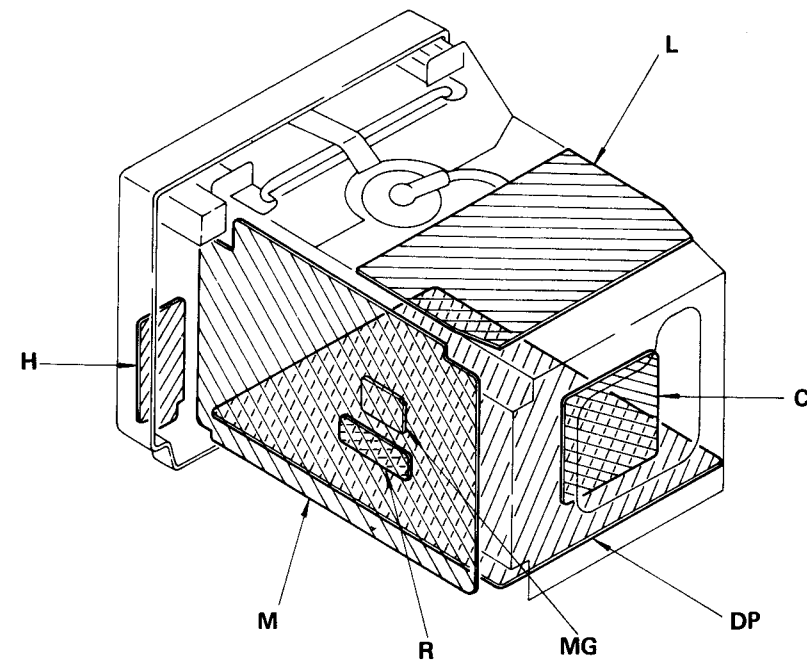
### 2-1. PICTURE TUBE REMOVAL



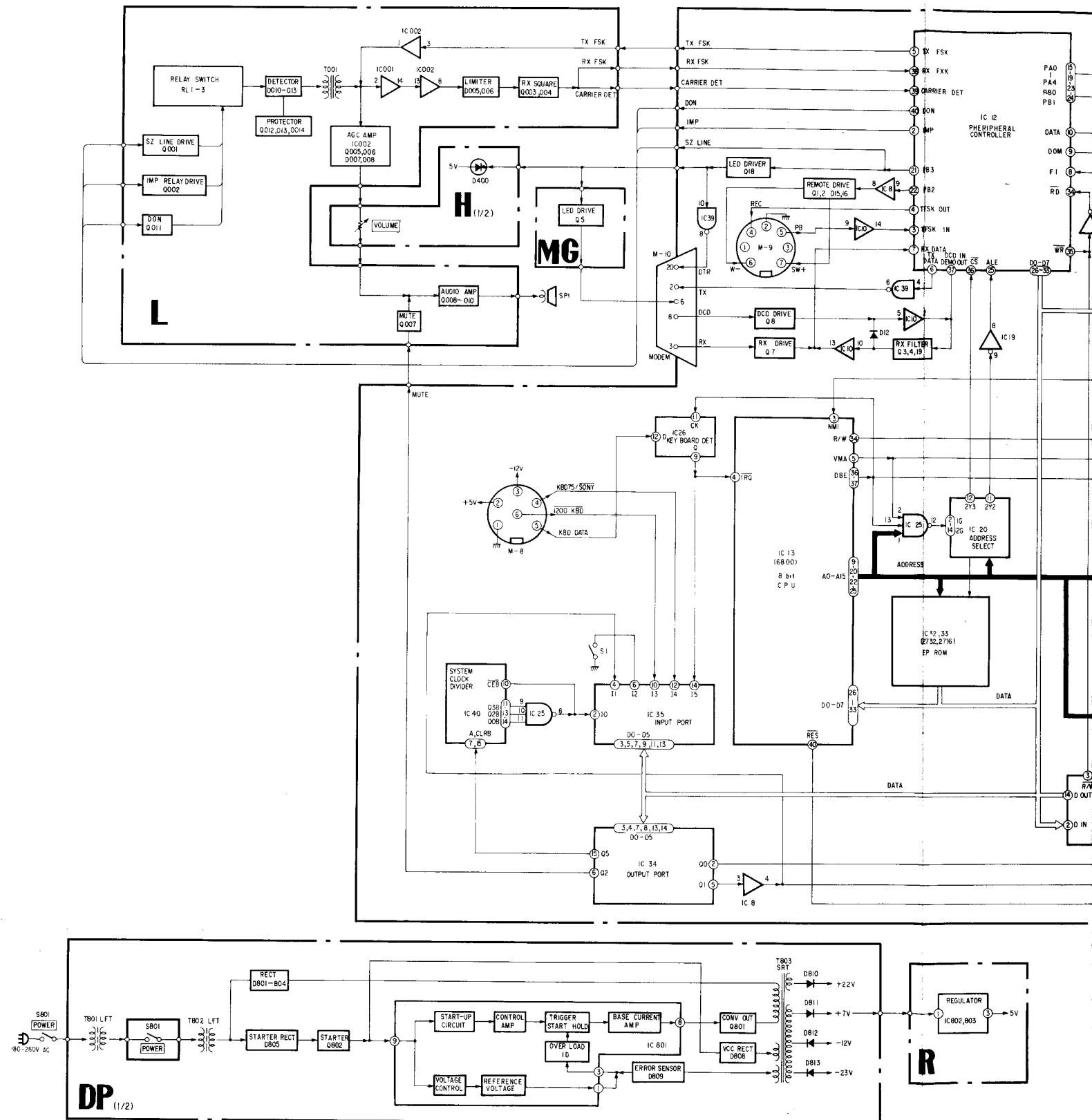
### 2-2. M BOARD REMOVAL



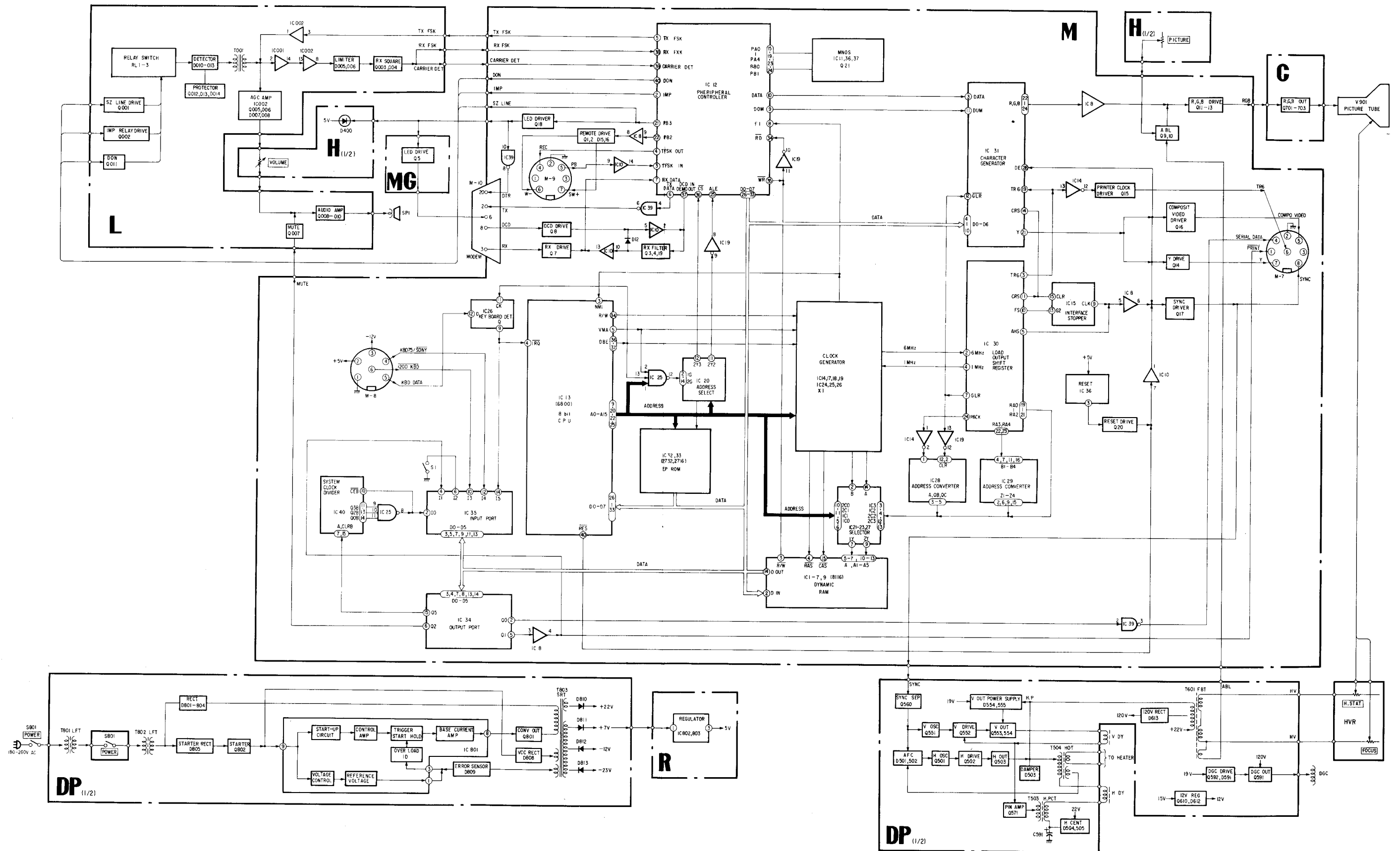
### 3-1. CIRCUIT BOARDS LOCATION



### 3-2. BLOCK DIAGRAM



### 3-2. BLOCK DIAGRAM



[illegible]

53 - 57

57 53 54 55 56

0 0 0 0 0

+5V  
LED ON LINE  
RV1  
RV2  
RV3

M-6

27 28 29

0 0 0

G R B

M-1

GND

S DATA

PRINT

Y

COMPO VIDEO

SYNC

M-7

TR6

PRINTER

M-4

5V

5V

5V

-12V

+5V

GND

KBD75/SONY

KBD

DATA

M-8

KEY BOARD

M1/3 /CHROMA, Y DRIVE)  
PIC CONTROL

+5V

-12V

ABL

PIC

75/12

MUTE

LED

VIDEO

See page 15, 16

AC 180-260V 60Hz

DP-1

SR01 POWER

DP-2

DP-3

DP-4

DP-5

DP-6

DP-7

DP-8

DP-9

DP-10

DP-11

DP-12

DP-13

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DP-339

DP-340

DP-341

DP-342

DP-343

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DP-347

DP-348

DP-349

DP-350

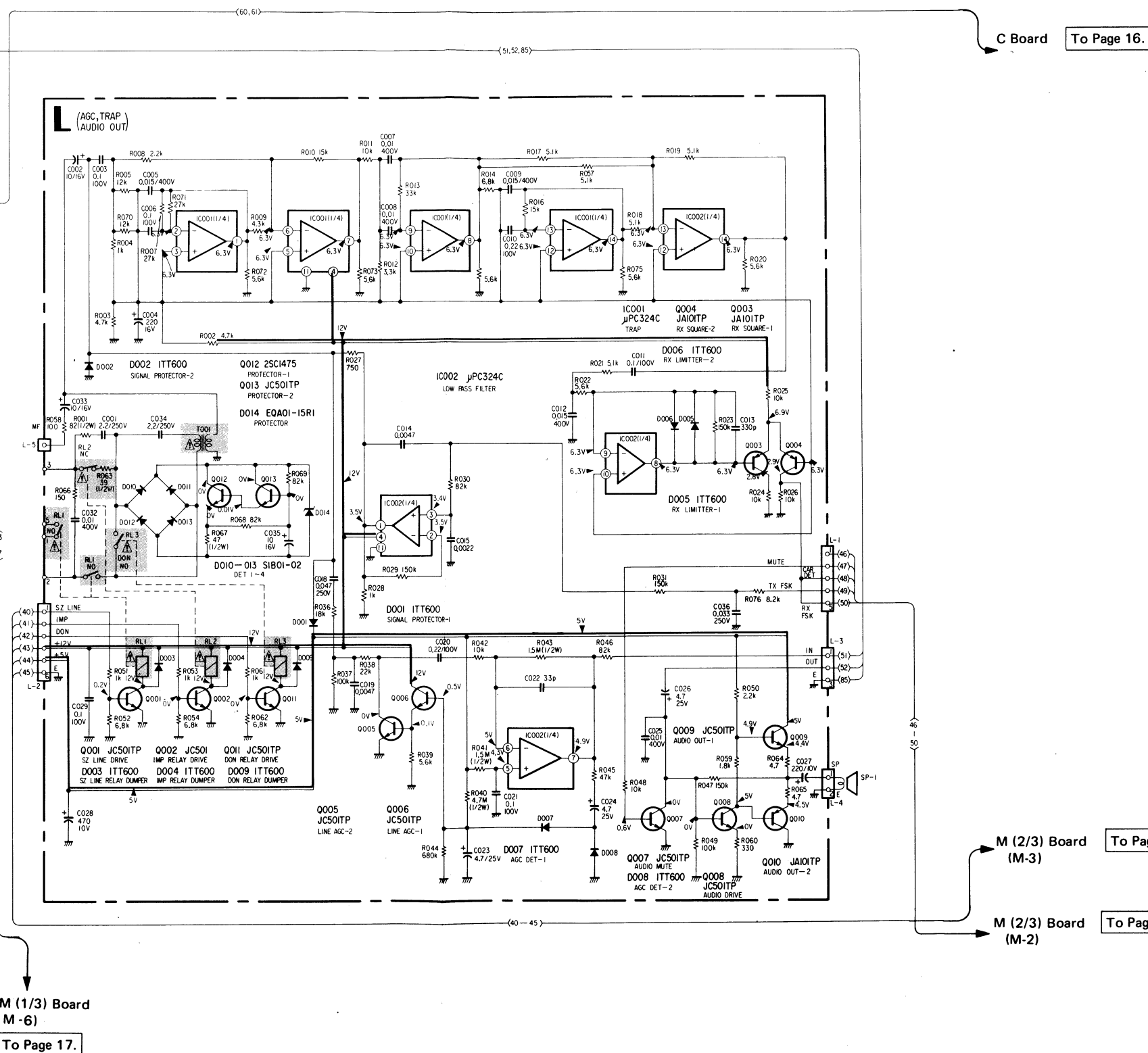
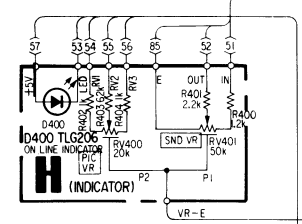
[illegible]


**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

- 
- M<sup>3</sup>/3** (DRAM,  
POW / COLUMN)

**See page 21, 22**

**H** [ CONTROLS INDICATOR ]      **L** [ LINE AGC, AUTO DIAL, TRAP  
LINE ISOLATION, AUDIO OUT ]



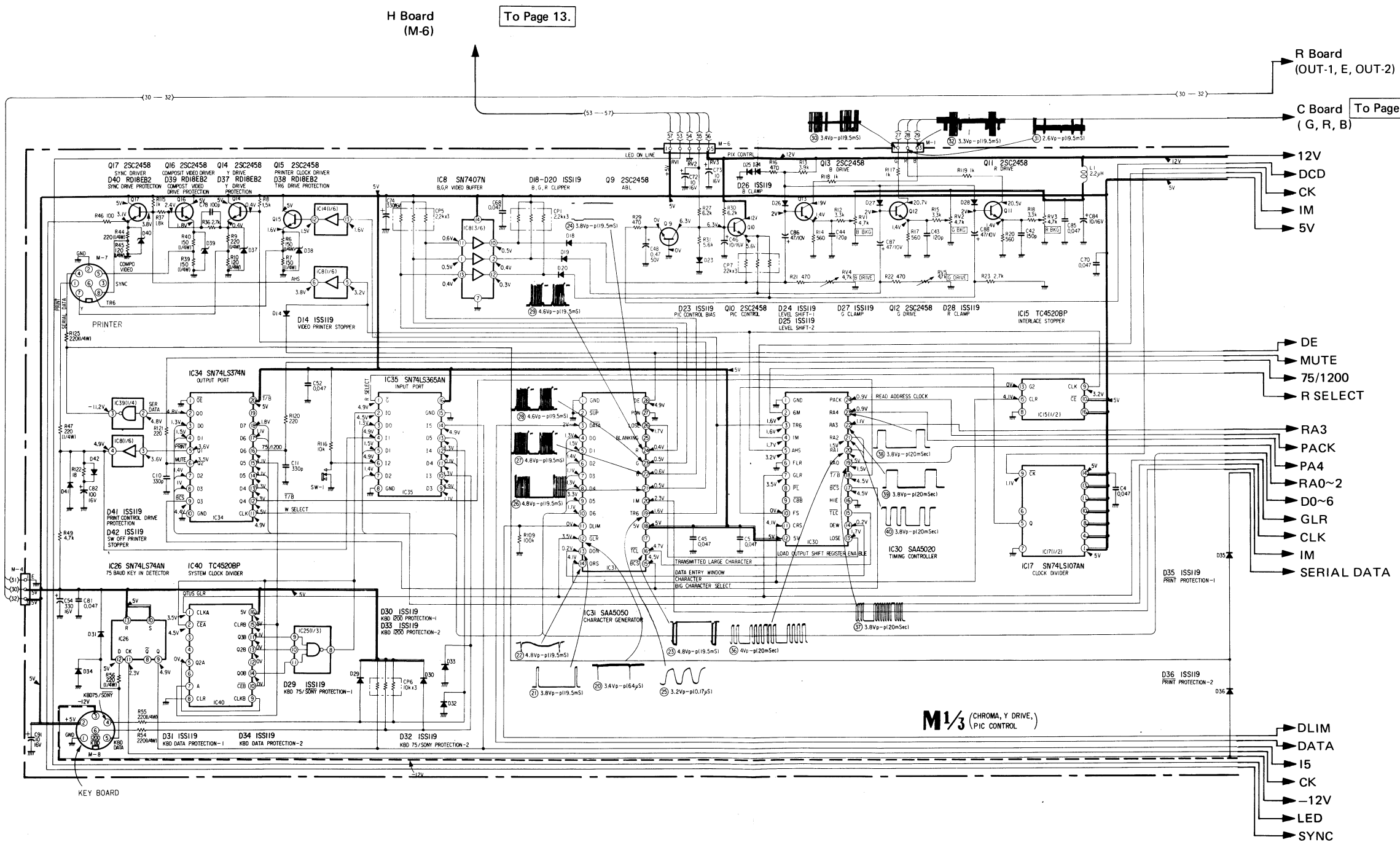
**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.



[ R.G.B OUT, VIDEO-DRIVE, PRINTER OUT ]  
[ PIC CONTROL, KEY BOARD I/O ]

**A** | **B** | **C** | **D** | **E** | **F** | **G**

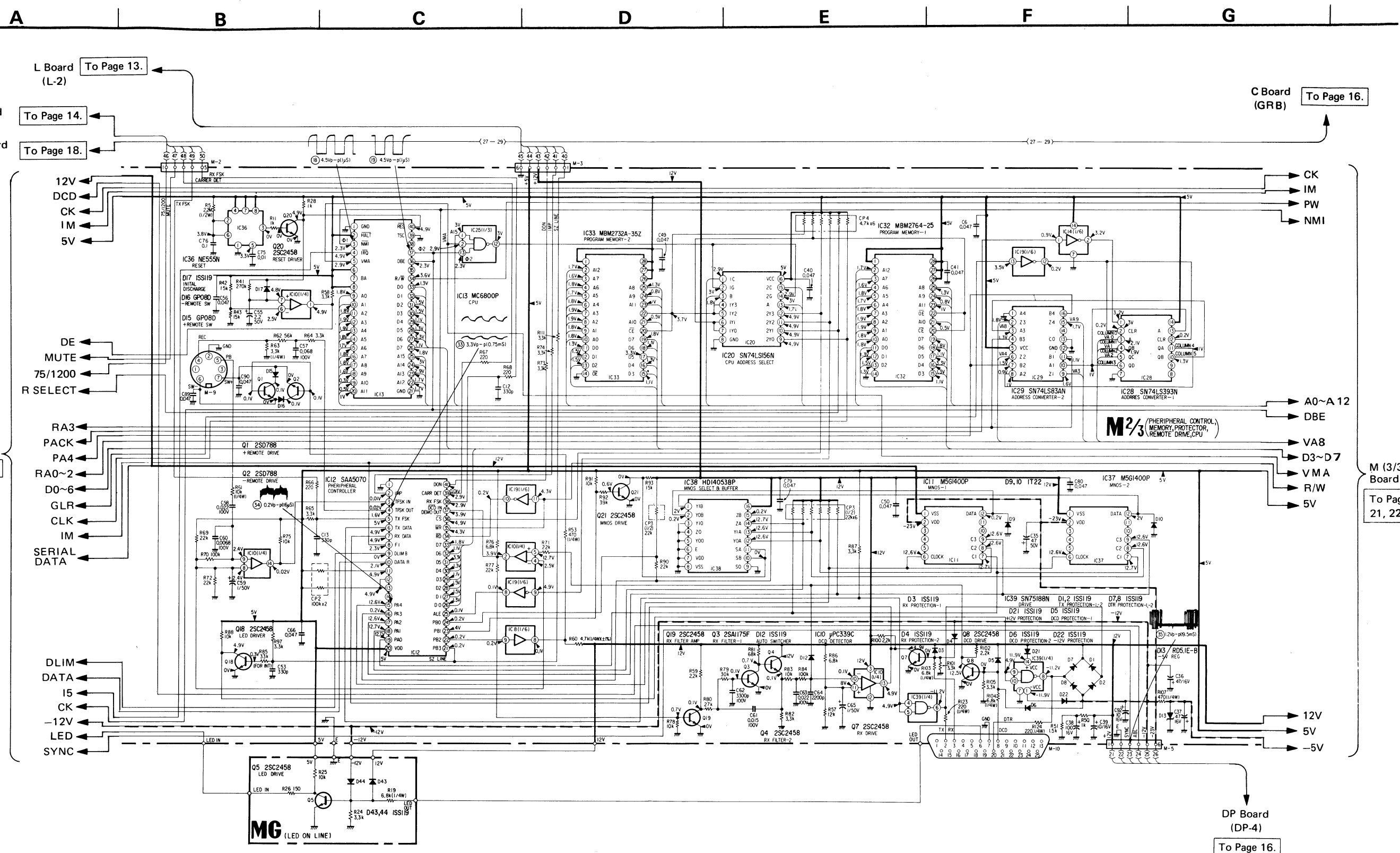


**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

M (2/3)

PERIPHERAL CONTROL, PROGRAM ROM  
MEMORY, PROTECTOR, NON-VOLATILE MEMORY  
TAPE I/O, CPU, EXTERNAL MODEM

M (2/3)



A

B

C

D

E

F

G

1

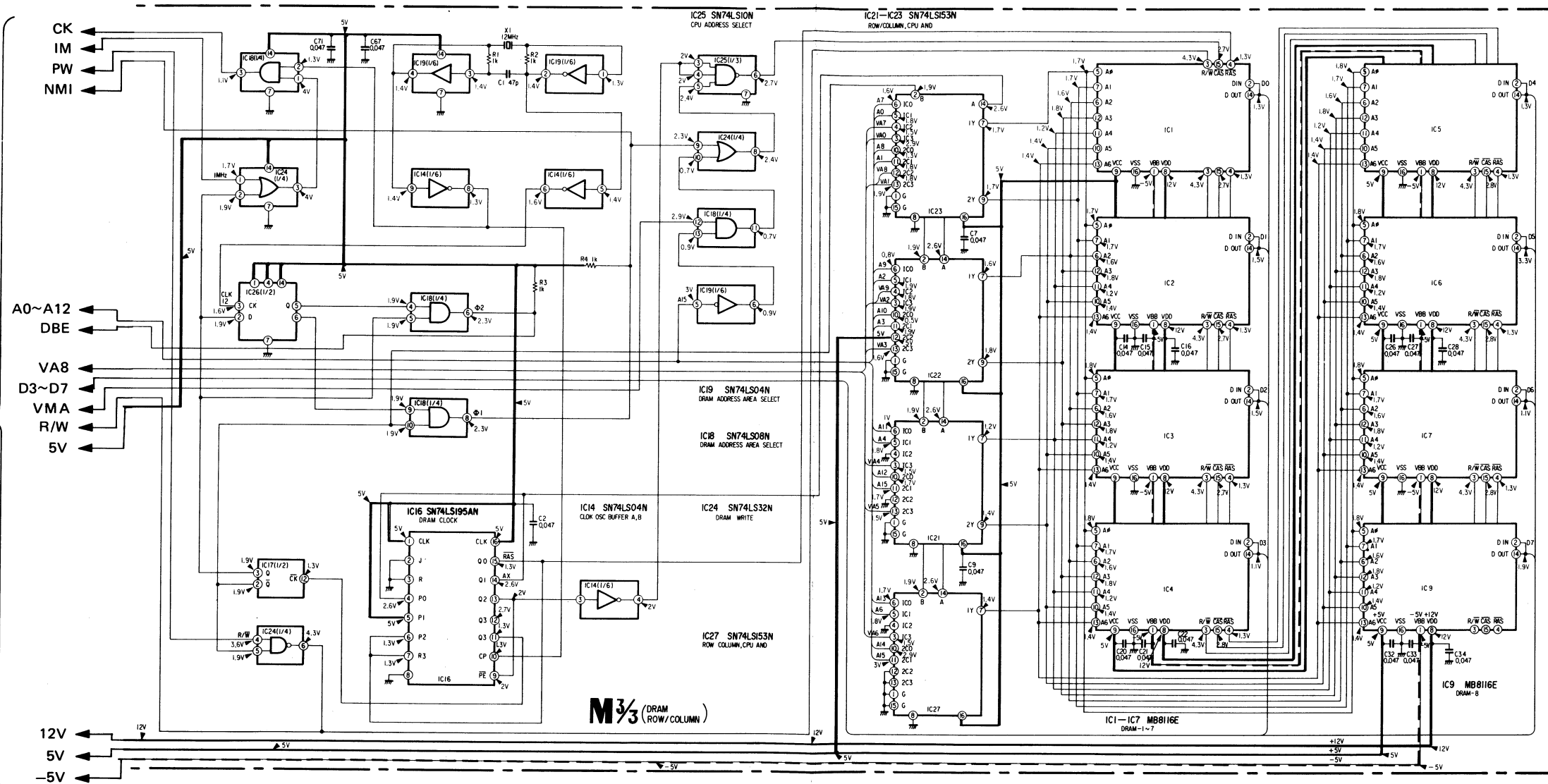
2

3

4

5

M (2/3) Board  
To Page 19, 20.



# 3-5. PRINTED WIRING BOARDS

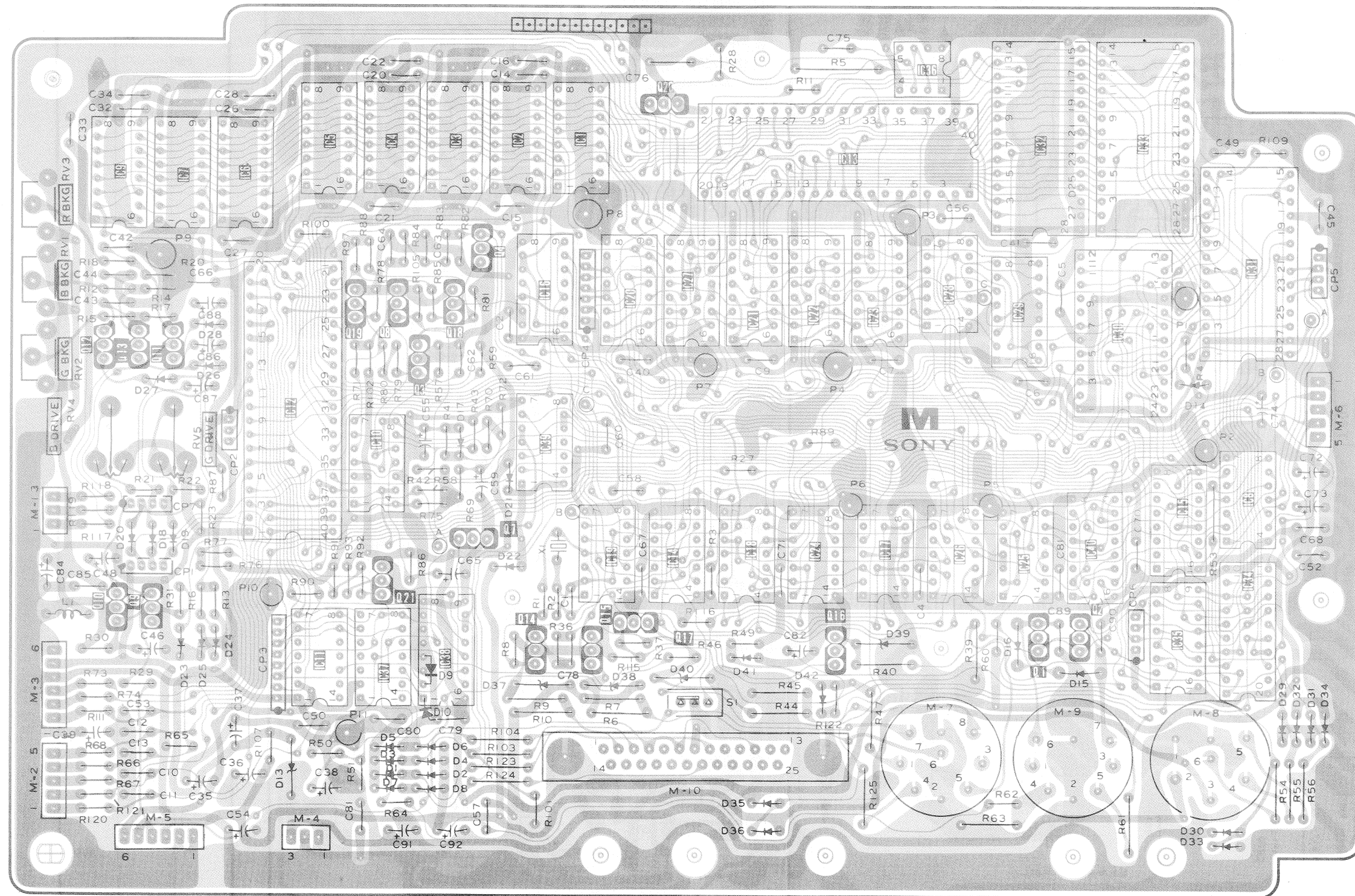
M

R.G.B, VIDEO DRIVE, PIC CONTROL, DRAM  
ROW/COLUMN, PHERIPHERAL CONTROL,  
MEMORY, PROTECTOR, TAPE, CPV

M

— M Board —

■ : MOUNTED WIRING BOARD



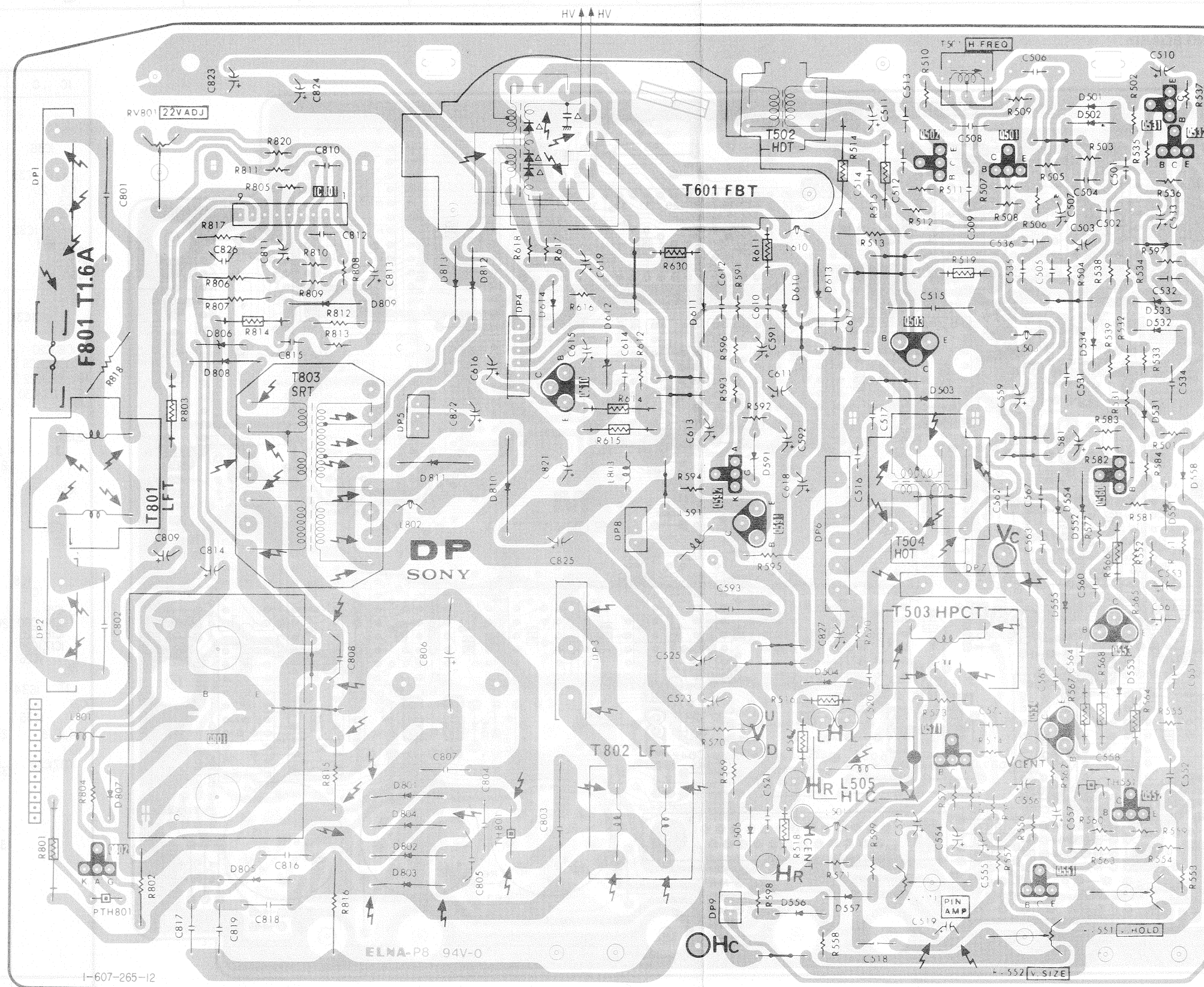
IC , Q	D	ADJ
IC36		
IC5 IC33		
IC4 20		
IC3		
IC2, IC1		
IC9 IC32		
IC7 IC13		
IC6		
		RV3
IC31		
4		
IC16, IC20		
IC27, IC28		
IC21, IC22		
IC23, IC30		
	28	
IC12		
	26	
	27	
	14	
		RV2
IC39		
IC10		
	21	
IC8		
IC15		
IC19		
IC14, IC40		
IC18, IC24		
IC17, IC25		
IC26		
	22	
IC34		
IC35		
	39	
	16	
	23, 25, 24	
	41	
	15	
	40	
	37, 38	
	42	
	29	
	32, 31, 34	
	5, 6	
	13, 3, 4	
	1, 2	
	7, 8	
	35	
	36, 30	
	33	
IC , Q	D	ADJ

DP

POWER SUPPLY  
AFC DET, H DEF  
V DEF, CONV. OUT

DP

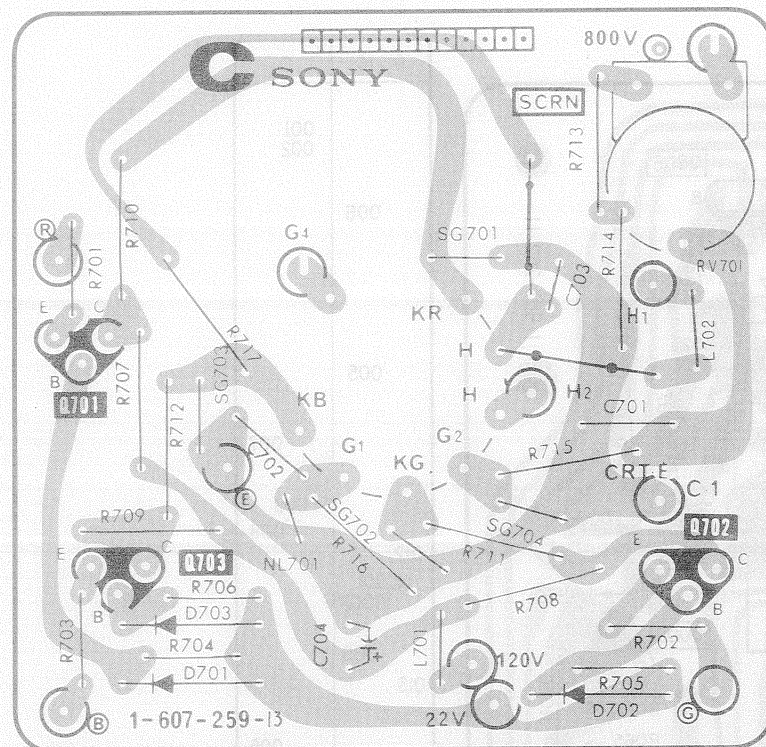
- DP Board -



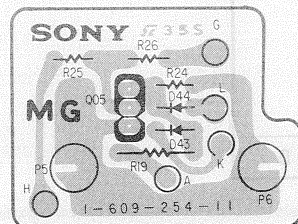
IC, Q	D	ADJ
531	501	
532	502	
502		RV801
501		
IC801		
	813,812	
	614	533
	809	611,610
		532
503	806	534
808	612	
610	503	
	531	
	591	
592	811	558
560	810	
591	554,552	551
	555	
553		
	504	
	553	
801	554	
571		
	807	
552	801	
	804	
	505	
	802	
802	803	RV571
551	805	
	556	
		RV552
IC, Q	D	ADJ

**C** [R.G.B. DRIVE  
R.G.B. OUT] **H** [CONTROLS  
INDICATOR] **R** [5V REG] **MG**

— C Board —

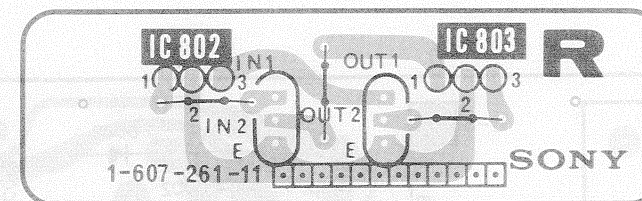


— MG Board —

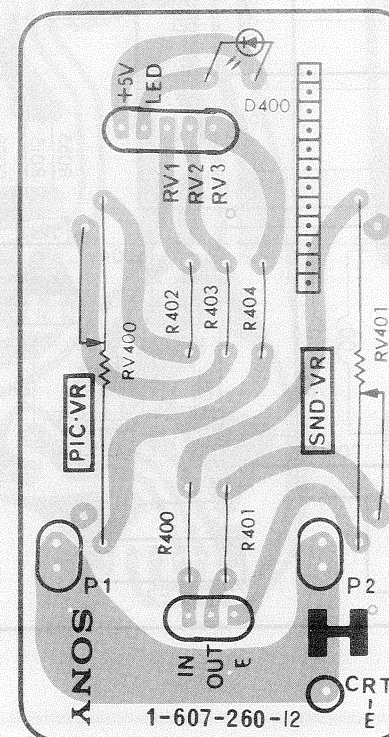


**C** **H** **R** **MG**

— R Board —

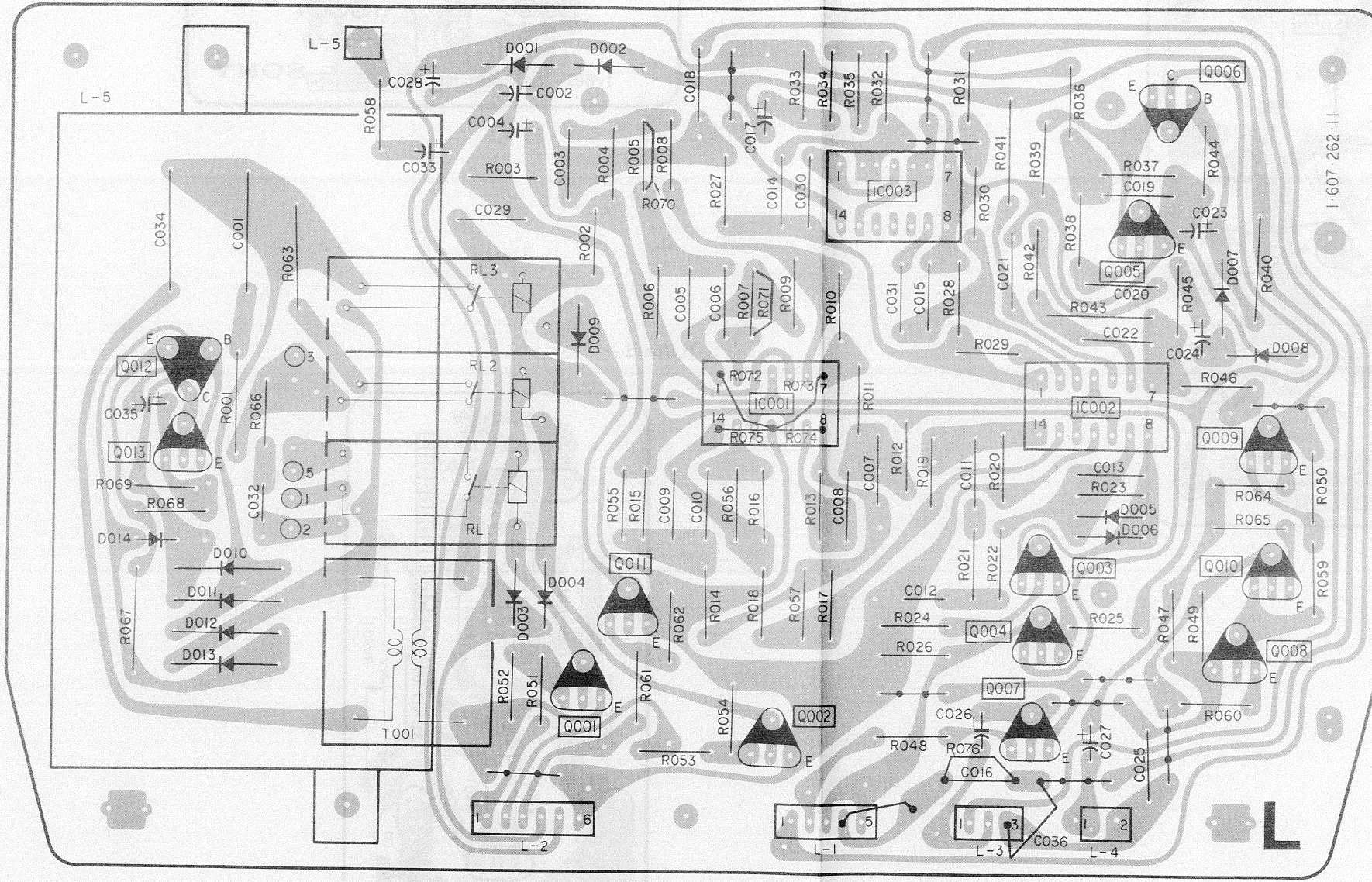


— H Board —



**L** [ LINE AGC, AUTO DIAL, TRAP  
LINE ISOLATION, AUDIO OUT ]

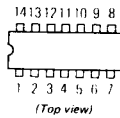
— L Board —



Q, IC	D
	001 002
006	
	005
	007
	009 008
012 IC001 IC002	
009	
013	
	005 006
003 010	014 010 011
011	003 004 012 013
004 008	
001	
002 007	
Q, IC	D

### 3-6. SEMICONDUCTORS

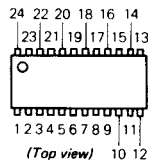
**μPC324C**  
**μPC339C**  
**HD14011BP**  
**M5G1400P**  
**MB3614**  
**MC14011BCP**  
**SN7407N**  
**SN74LS04N**  
**SN74LS08N**  
**SN74LS10N**  
**SN74LS32N**  
**SN74LS74AN**  
**SN74LS107AN**  
**SN74LS393N**  
**SN75188N**  
**TC4011BP**



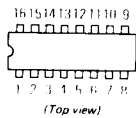
**μPC7805H**



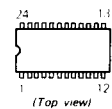
**CX786**



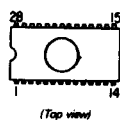
**HD14053BP**  
**MB8116E**  
**MC14053BCP**  
**SN74LS83AN**  
**SN74LS153N**  
**SN74LS156N**  
**SN74LS195AN**  
**SN74LS365AN**



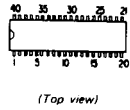
**MB8532-45**  
**MB2732A-35**



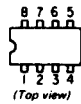
**MBM2764-20**  
**MBM2764-25**



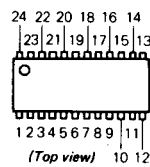
**MC6800P**  
**SAA5070**



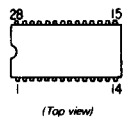
**NE555N**



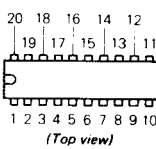
**SAA5020**



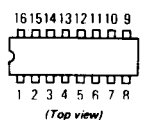
**SAA5050**



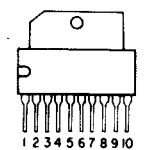
**SN74LS374N**



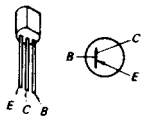
**TC4520BP**



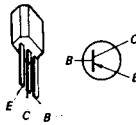
**TDA4600**



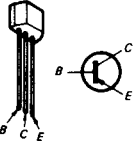
**2SA733**  
**2SA773**  
**2SA1015**



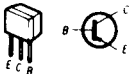
**2SA1026**  
**2SA1027R**



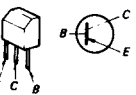
**2SA1048**  
**2SA1115**



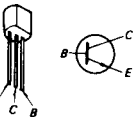
**2SA1175**



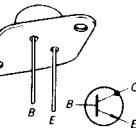
**2SB734**



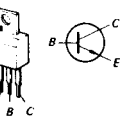
**2SC1364**  
**2SC1474**  
**2SC1475**  
**2SD788**  
**2SD1015**



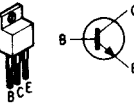
**2SC1413A**  
**2SC1942**



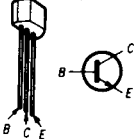
**2SC2278**



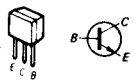
**2SC2373**  
**2SD1134**



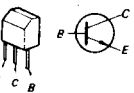
**2SC2458**



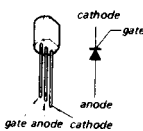
**2SC2785**



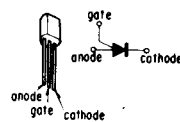
**2SD773**  
**2SD774**



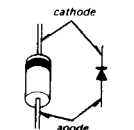
**CR02AM-8**



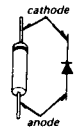
**N13T1**



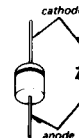
**1N4148H**  
**1SS119**  
**1SS133**  
**ERC81-004**  
**GP08D**  
**US1035**



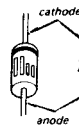
**1S1518**  
**1S1555**  
**1S2076**  
**1S2076A**  
**1S2076ATP**  
**1S2473**  
**1SS148**  
**10E-2**  
**RD13E-82**  
**RD5.1E-8**



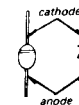
**ERD29-04**  
**ERD29-08J**



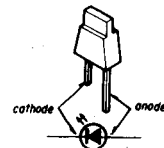
**EQA01-06S**  
**EQA01-15R1**  
**EQA01-15R1V**  
**SIB01-02**  
**EQB01-06**  
**EQB01-15**  
**ERB12-02RK**  
**RD18E-B1**  
**RD18E-B2**  
**RH-1A**  
**RH-1Z**



**U05G**  
**V06C**  
**V09C**  
**V019C**  
**V019E**



**TLG206**



## SECTION 4

### EXPLODED VIEWS

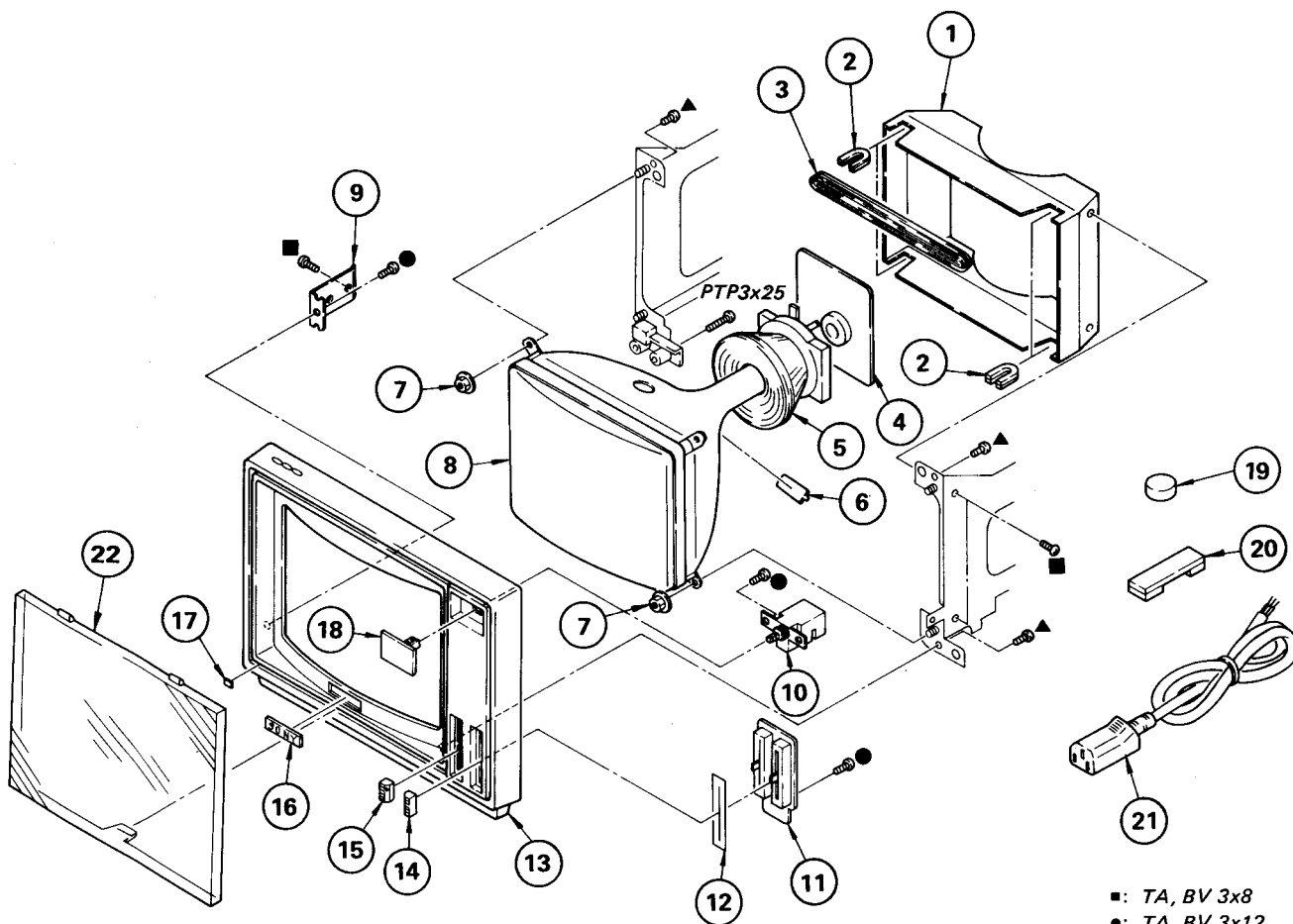
NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

(1) BEZEL, CRT



■:  $TA, BV$  3x8

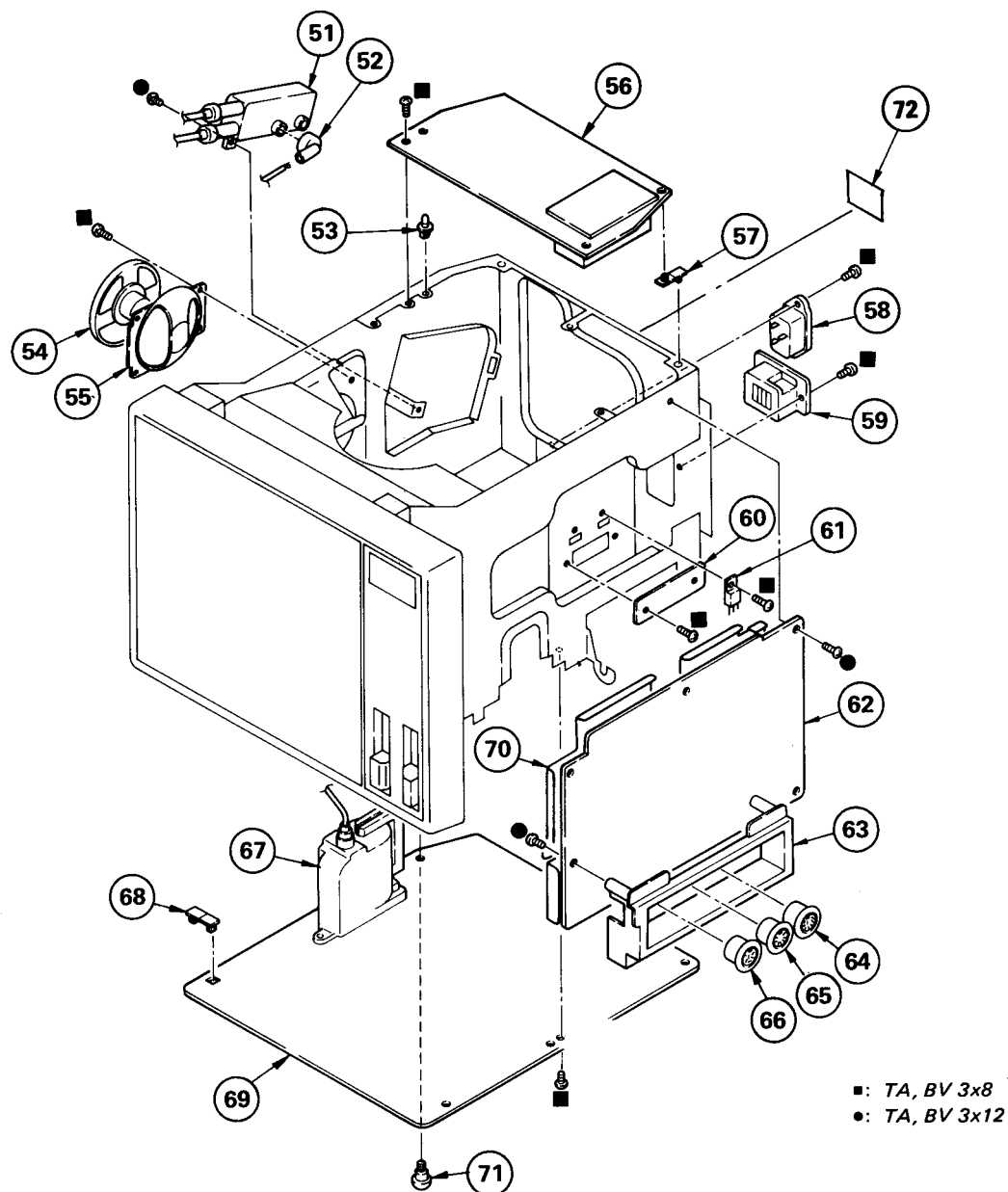
●: TA, BV 3x12

▲: TA, BV 4x12

KTX-9000UB MECHA

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	●:X-4325-007-0	CRT SHIELD ASSY		12	●:4-344-748-00	BLIND, CONTROL	
2	4-304-483-00	BUSHING, DEGAUSSING COIL		13	X-4360-232-0	BEZEL ASSY	12,16,17
3	▲:1-426-043-00	COIL, DEGAUSSING		14	4-344-722-00	KNOB (R), SLIDE CONTROL (PICTURE)	
4	●:A-1330-368-A	C BOARD, COMPLETE		15	4-344-723-00	KNOB (L), SLIDE CONTROL (VOLUME)	
5	▲:1-451-145-00	DEFLECTION YOKE		16	●:3-703-352-00	EMBLEM, SONY	
6	4-309-369-00	SPACER, DEFLECTION YOKE		17	3-831-441-XX	CUSHION	
7	4-304-749-00	NUT, FLANGE		18	4-344-724-00	BUTTON, POWER	
8	▲:8-733-851-05	PICTURE TUBE (220JB22)		19	1-452-126-11	MAGNET	
9	●:4-344-702-00	BRACKET, SIDE CHASSIS		20	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
10	▲:1-552-503-00	SWITCH, PUSH		21	▲:1-534-698-XX	POWER CORD	
11	●:1-607-260-00	H BOARD		22	4-344-734-11	FILTER	

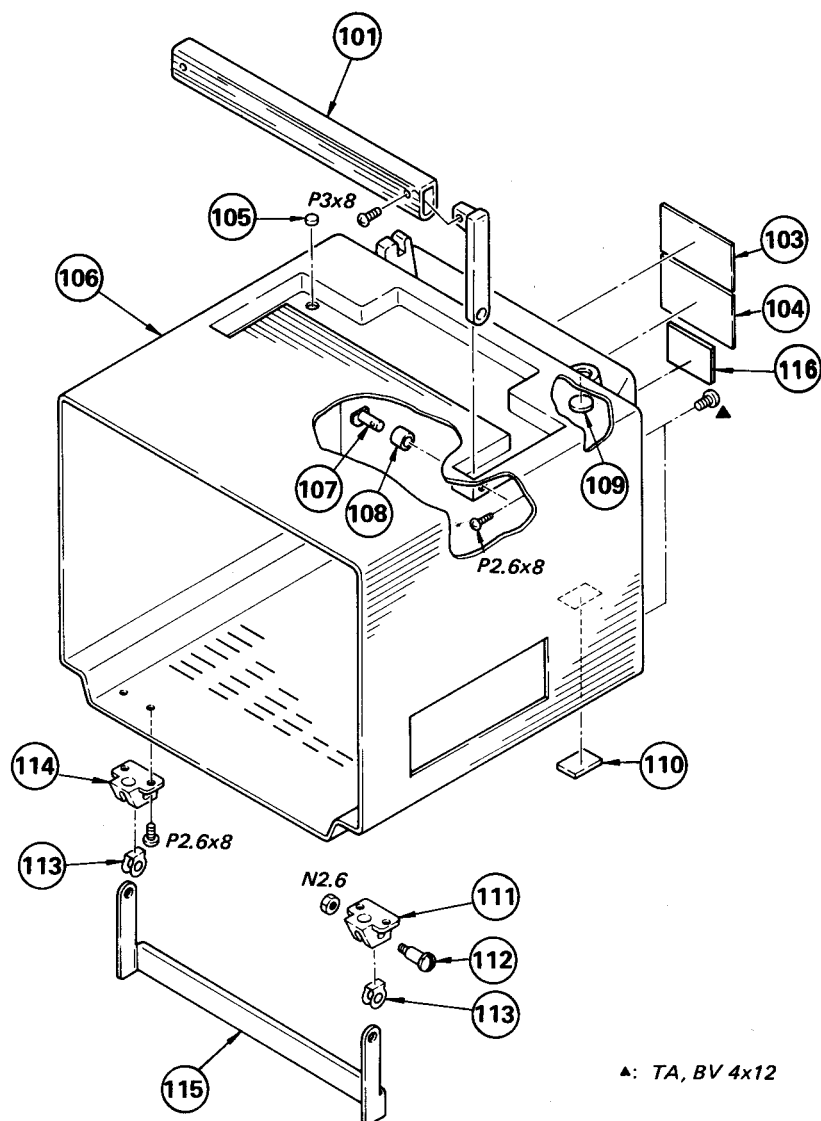
## (2) CHASSIS



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	▲1-226-881-00	RESISTOR ASSY, HIGH-VOLTAGE		62	●A-1306-242-A	M BOARD, COMPLETE	
52	3-705-769-00	CAP, RUBBER		63	X-4360-231-0	COVER ASSY, MODEM	
53	●4-303-473-00	SUPPORT, PC		64	1-561-665-00	SOCKET, DIN 8P	
54	1-502-509-31	SPEAKER		65	1-561-579-00	JACK, DIN 7P	
55	●4-344-240-00	BRACKET, SPEAKER		66	1-561-580-00	JACK, DIN 6P	
56	●A-1394-022-A	L BOARD, COMPLETE		67	▲1-439-261-00	TRANSFORMER ASSY, FLYBACK	
57	●3-701-832-00	HINGE, CIRCUIT BOARD		68	●4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
58	▲1-509-547-00	3P INLET		69	●A-1665-008-A	DP BOARD, COMPLETE	
59	4-360-210-00	GROMMET		70	●X-4360-206-0	PLATE (M) ASSY, SHILED	
60	●1-607-261-00	R BOARD		71	4-310-939-00	SCREW, TAPPING, STEP	
61	8-759-171-05	IC UPC7805H		72	●3-703-058-00	LABEL PTB EXEMPTION	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

### (3) CABINET



▲: TA, BV 4x12

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	4-344-720-11	HANDLE		109	4-026-609-00	BLIND	
103	3-703-057-00	LABEL PTB EXEMPTION		110	9-911-852-XX	CUSHION	
104	4-360-292-01	LABEL, MODEL NUMBER		111	4-002-791-00	BRACKET (RIGHT), LEG	
105	4-314-871-00	CUSHION		112	4-002-789-00	SCREW	
106	X-4360-233-0	CABINET ASSY	101,105,107,108 109,110,115,116	113	4-002-732-02	SPRING	
107	4-344-707-00	SHAFT		114	4-002-790-00	BRACKET (LEFT), LEG	
108	4-344-711-00	BUSHING, NYLON		115	X-4309-316-0	LEG ASSY	111,112, 113,114
				116	4-337-218-21	LABEL, VOLTAGE INDICATION	

## SECTION 5

### ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

## CAPACITORS

• MF :  $\mu\text{F}$ , PF :  $\mu\mu\text{F}$

## RESISTORS

- All resistors are in ohms
- F : nonflammable

## COILS

• MMH : mH, UH :  $\mu$ H

When indicating parts by reference number, please include the board name.


[illegible]

**DP**

No.	Part No.	Description	Remark
D591	=>8-719-931-06	DIODE EQ801-06	
D610	8-719-900-93	DIODE V09C	
D611	=>8-719-901-93	DIODE V19E	
D612	8-719-100-68	DIODE RD13E-B2	
D613	=>8-719-300-76	DIODE RH1Z	
D614	=>8-719-815-55	DIODE 1S1555	
D801	=>8-719-911-55	DIODE U05G	
D802	=>8-719-911-55	DIODE U05G	
D803	=>8-719-911-55	DIODE U05G	
D804	=>8-719-911-55	DIODE U05G	
D805	=>8-719-200-02	DIODE 10E2	
D806	8-719-100-68	DIODE RD13E-B2	
D807	=>8-719-815-85	DIODE 1S1518	
D808	8-719-900-93	DIODE V09C	
D809	=>8-719-300-76	DIODE RH1A	
D810	=>8-719-900-26	DIODE ERD29-08J	
D811	8-719-981-00	DIODE ERC81-004	
D812	8-719-900-93	DIODE V09C	
D813	8-719-900-93	DIODE V09C	
<u>CONNECTOR</u>			
DP1	1-506-348-XX	3P PLUG (L)	
DP2	1-506-348-XX	3P PLUG (L)	
DP3	1-506-348-XX	3P PLUG (L)	
DP4	●:1-560-126-00	PLUG, CONNECTOR (2.5MM) 6P	
DP5	●:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P	
DP6	●:1-508-767-00	5P PLUG	
DP7	●:1-508-766-00	4P PLUG (M)	
DP8	●:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P	
<u>FUSE</u>			
F801	A-1-532-259-00	FUSE, TIME-LAG 1.6A	
<u>IC</u>			
IC801	8-759-046-00	IC TDA4600	
	●:4-356-301-00	HEAT SINK (D), IC801	
	7-685-646-71	SCREW +BVTP 3x8 TYPE2 IT-3, IC801	
<u>COIL</u>			
L501	1-407-191-XX	MICRO INDUCTOR 470UH	
L503	1-407-365-00	COIL, CHOKE	
L505	1-459-196-00	HLC	
L591	1-459-109-00	COIL, DUST CORE	
L610	1-407-163-XX	MICRO INDUCTOR 33UH	
L801	1-408-225-00	MICRO INDUCTOR 3.3UH	
L802	1-425-613-00	COIL, AIR-CORE, QF TYPE	
L803	1-459-215-00	CORE COIL	
<u>THERMISTOR</u>			
PTH801	1-806-449-21	THERMISTOR (POSITIVE)	
<u>TRANSISTOR</u>			
Q501	=>8-729-612-77	TRANSISTOR 2SA1027R	

Q No.	Part No.	Description	Remark
Q502	=>8-729-663-47	TRANSISTOR 2SC1364	
Q503	8-729-137-32	TRANSISTOR 2SC2373	
Q551	=>8-729-663-47	TRANSISTOR 2SC1364	
Q552	=>8-729-663-47	TRANSISTOR 2SC1364	
Q553	8-729-177-43	TRANSISTOR 2SD774	
Q554	8-729-103-43	TRANSISTOR 2SB734	
Q560	=>8-729-117-54	TRANSISTOR 2SA1175	
Q571	=>8-729-663-47	TRANSISTOR 2SC1364	
Q591	8-765-620-00	TRANSISTOR 2SD1015	
Q592	8-729-101-31	TRANSISTOR N13T1	
Q610	8-729-313-42	TRANSISTOR 2SD1134	
Q801	=>8-729-341-34	TRANSISTOR 2SC1413A	
Q802	8-719-000-28	THYRISTOR CRO2AM-8	
<b>RESISTOR</b>			
R501	1-246-782-00	CARBON 820	1/8W
R502	1-246-855-00	CARBON 9.1K	1/8W
R503	1-246-796-00	CARBON 12K	1/8W
R504	1-246-850-99	CARBON 3.6K	1/8W
R505	1-246-854-00	CARBON 7.5K	1/8W
R506	1-246-785-00	CARBON 1.5K	1/8W
R507	1-246-785-00	CARBON 1.5K	1/8W
R508	1-246-861-00	CARBON 30K	1/8W
R509	1-246-764-99	CARBON 27	1/8W
R510	1-246-759-00	CARBON 10	1/8W
R511	1-246-780-00	CARBON 560	1/8W
R512	1-246-781-00	CARBON 680	1/8W
R513	1-244-885-00	CARBON 3.3K 5%	1/2W
R514	1-206-648-00	METAL 220 5%	2W F
R515	1-212-365-00	METAL 2.7 5%	1W F
R516	1-211-409-00	CARBON 10 5%	1/8W F
R517	1-211-933-00	CARBON 47 5%	1/8W F
R518	1-211-417-00	CARBON 22 5%	1/8W F
R519	1-211-403-00	CARBON 5.6 5%	1/8W F
R551	1-246-861-00	CARBON 30K	1/8W
R552	1-246-795-00	CARBON 10K	1/8W
R553	1-246-796-00	CARBON 12K	1/8W
R554	1-246-777-00	CARBON 330	1/8W
R555	1-246-803-00	CARBON 47K	1/8W
R556	1-246-757-99	CARBON 6.8	1/8W
R557	1-215-092-00	METAL 3.3 5%	1/4W
R558	1-246-798-00	CARBON 18K	1/8W
R559	1-246-782-00	CARBON 820	1/8W
R560	1-246-782-00	CARBON 820	1/8W
R561	1-246-860-00	CARBON 24K	1/8W
R562	1-246-838-00	CARBON 360	1/8W
R563	1-207-460-00	WIREWOUND 0.56 10%	1/2W
R564	1-247-032-00	CARBON 68 5%	1/8W F
R565	1-215-150-00	METAL 820 5%	1/4W
R566	1-211-524-00	CARBON 120 5%	1/4W F
R567	1-246-413-00	CARBON 3.3 5%	1/4W F
R568	1-246-413-00	CARBON 3.3 5%	1/4W F
R569	1-215-156-00	METAL 1.5K 5%	1/4W

NOTE :

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
R570	1-215-156-00	METAL	1.5K 5% 1/4W	TRANSFORMER			
R571	1-246-802-00	CARBON	39K 1/8W	T501	1-405-760-00	COIL, OSC	
R572	1-246-789-00	CARBON	3.3K 1/8W	T502	1-437-021-00	TRANSFORMER, HORIZONTAL DRIVE	
R573	1-215-148-00	METAL	680 5% 1/4W	T503	1-421-268-00	H.PCT	
R574	1-246-795-00	CARBON	10K 1/8W	T504	1-439-259-00	TRANSFORMER, HORIZONTAL OUTPUT	
R575	1-246-828-00	CARBON	51 1/8W	T801	1-421-352-00	TRANSFORMER, FERRITE	
R577	1-246-859-00	CARBON	20K 1/8W	T802	1-441-855-00	TRANSFORMER, HEATER INSULATION	
R581	1-246-789-00	CARBON	3.3K 1/8W	T803	1-447-365-00	TRANSFORMER, FERRITE	
R582	1-246-801-00	CARBON	33K 1/8W	THERMISTOR			
R583	1-246-789-00	CARBON	3.3K 1/8W	TH551	1-800-070-XX	THERMISTOR TH-4700	
R584	1-246-777-00	CARBON	330 1/8W	TH801	1-800-820-00	THERMISTOR, POWER	
R591	1-246-807-00	CARBON	100K 1/8W	*****			
R592	1-246-771-00	CARBON	100 1/8W	•:A-1306-242-A	M BOARD, COMPLETE		
R593	1-246-797-00	CARBON	15K 1/8W	• 4-360-293-00	SPACER BOSS		
R594	1-246-783-00	CARBON	1K 1/8W	• 4-360-294-00	BOLT, SPECIAL		
R595	1-215-196-00	METAL	68K 5% 1/4W	CAPACITOR			
R596	1-246-772-00	CARBON	120 1/8W	C1	1-101-880-00	CERAMIC 47PF 5% 50V	
R611	1-246-979-00	CARBON	1.2 5% 1/8W F	C2	1-101-006-00	CERAMIC 0.047MF 50V	
R612	1-246-775-00	CARBON	220 1/8W	C4	1-101-006-00	CERAMIC 0.047MF 50V	
R614	1-213-125-00	METAL	33 5% 1W F	C5	1-101-006-00	CERAMIC 0.047MF 50V	
R615	1-212-368-00	METAL	4.7 5% 1W F	C6	1-101-006-00	CERAMIC 0.047MF 50V	
R616	1-246-789-00	CARBON	3.3K 1/8W	C7	1-101-006-00	CERAMIC 0.047MF 50V	
R617	1-246-801-00	CARBON	33K 1/8W	C9	1-101-006-00	CERAMIC 0.047MF 50V	
R618	1-246-807-00	CARBON	100K 1/8W	C10	1-102-112-00	CERAMIC 330PF 10% 50V	
R620	1-246-786-00	CARBON	1.8K 1/8W	C11	1-102-112-00	CERAMIC 330PF 10% 50V	
R630	1-246-979-00	CARBON	1.2 5% 1/8W F	C12	1-102-112-00	CERAMIC 330PF 10% 50V	
R801	1-206-664-00	METAL	1K 5% 2W F	C13	1-102-112-00	CERAMIC 330PF 10% 50V	
R802	1-244-933-51	CARBON	330K 5% 1/2W F	C14	1-101-006-00	CERAMIC 0.047MF 50V	
R803	1-212-361-00	METAL	1.2 5% 1W F	C15	1-101-006-00	CERAMIC 0.047MF 50V	
R804	1-215-114-00	METAL	27 5% 1/4W	C16	1-101-006-00	CERAMIC 0.047MF 50V	
R805	1-246-795-00	CARBON	10K 1/8W	C20	1-101-006-00	CERAMIC 0.047MF 50V	
R806	1-244-935-51	CARBON	390K 5% 1/2W	C21	1-101-006-00	CERAMIC 0.047MF 50V	
R807	1-244-931-51	CARBON	270K 5% 1/2W	C22	1-101-006-00	CERAMIC 0.047MF 50V	
R808	1-246-795-00	CARBON	10K 1/8W	C26	1-101-006-00	CERAMIC 0.047MF 50V	
R809	1-246-777-00	CARBON	330 1/8W	C27	1-101-006-00	CERAMIC 0.047MF 50V	
R810	1-246-841-00	CARBON	620 1/8W	C28	1-101-006-00	CERAMIC 0.047MF 50V	
R811	1-246-794-00	CARBON	8.2K 1/8W	C32	1-101-006-00	CERAMIC 0.047MF 50V	
R812	1-215-170-00	METAL	5.6K 5% 1/4W	C33	1-101-006-00	CERAMIC 0.047MF 50V	
R813	1-246-787-00	CARBON	2.2K 1/8W	C34	1-101-006-00	CERAMIC 0.047MF 50V	
R814	1-213-126-00	METAL	39 5% 1W F	C35	1-123-359-00	ELECT 47MF 20% 50V	
R815	1-205-598-00	CEMENT-COATED	33 10% 5W	C36	1-123-332-00	ELECT 47MF 20% 16V	
R816	1-247-289-00	CARBON	8.2M 5% 1W	C37	1-123-332-00	ELECT 47MF 20% 16V	
R817	1-215-162-00	*****	2.7K 5% 1/4W	C38	1-123-333-00	ELECT 100MF 20% 16V	
R818	1-202-663-15	COMPOSITION	5.6M 5% 1/2W	C39	1-123-356-00	ELECT 10MF 20% 16V	
R820	1-246-780-00	CARBON	560 1/8W	C40	1-101-006-00	CERAMIC 0.047MF 50V	
VARIABLE RESISTOR				C41	1-101-006-00	CERAMIC 0.047MF 50V	
RV551	1-224-646-XX	RES, ADJ, CARBON 22K		C42	1-102-108-00	CERAMIC 150PF 10% 50V	
RV552	1-224-645-XX	RES, ADJ, CARBON 10K		C43	1-102-107-00	CERAMIC 120PF 10% 50V	
RV571	1-224-646-XX	RES, ADJ, CARBON 22K		C44	1-102-107-00	CERAMIC 120PF 10% 50V	
RV801	1-224-643-XX	RES, ADJ, CARBON 2.2K		C45	1-101-006-00	CERAMIC 0.047MF 50V	

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
C46	1-123-356-00	ELECT	10MF 20% 16V	D13	8-719-151-07	DIODE RD5.1E-B	
C48	1-123-379-00	ELECT	0.47MF 20% 50V	D14	8-719-911-19	DIODE 1SS119	
C49	1-101-006-00	CERAMIC	0.047MF 50V	D15	=>8-719-200-02	DIODE 10E-2	
C50	1-101-006-00	CERAMIC	0.047MF 50V	D16	=>8-719-200-02	DIODE 10E-2	
C52	1-101-006-00	CERAMIC	0.047MF 50V	D17	8-719-911-19	DIODE 1SS119	
C53	1-102-112-00	CERAMIC	330PF 10% 50V	D18	8-719-911-19	DIODE 1SS119	
C54	1-123-322-00	ELECT	330MF 20% 16V	D19	8-719-911-19	DIODE 1SS119	
C55	1-123-381-00	ELECT	2.2MF 20% 50V	D20	8-719-911-19	DIODE 1SS119	
C56	1-101-006-00	CERAMIC	0.047MF 50V	D21	8-719-911-19	DIODE 1SS119	
C57	1-108-387-00	MYLAR	0.068MF 10% 100V	D22	8-719-911-19	DIODE 1SS119	
C58	1-108-381-00	MYLAR	0.022MF 10% 100V	D23	8-719-911-19	DIODE 1SS119	
C59	1-123-380-00	ELECT	1MF 20% 50V	D24	8-719-911-19	DIODE 1SS119	
C60	1-108-375-00	MYLAR	0.0068MF 10% 100V	D25	8-719-911-19	DIODE 1SS119	
C61	1-108-379-00	MYLAR	0.015MF 10% 100V	D26	8-719-911-19	DIODE 1SS119	
C62	1-108-371-00	MYLAR	0.0033MF 10% 100V	D27	8-719-911-19	DIODE 1SS119	
C63	1-108-381-00	MYLAR	0.022MF 10% 100V	D28	8-719-911-19	DIODE 1SS119	
C64	1-102-121-00	CERAMIC	0.0022MF 10% 50V	D29	8-719-911-19	DIODE 1SS119	
C65	1-123-380-00	ELECT	1MF 20% 50V	D30	8-719-911-19	DIODE 1SS119	
C66	1-101-006-00	CERAMIC	0.047MF 50V	D31	8-719-911-19	DIODE 1SS119	
C67	1-101-006-00	CERAMIC	0.047MF 50V	D32	8-719-911-19	DIODE 1SS119	
C68	1-101-006-00	CERAMIC	0.047MF 50V	D33	8-719-911-19	DIODE 1SS119	
C70	1-101-006-00	CERAMIC	0.047MF 50V	D34	8-719-911-19	DIODE 1SS119	
C71	1-101-006-00	CERAMIC	0.047MF 50V	D35	8-719-911-19	DIODE 1SS119	
C72	1-123-356-00	ELECT	10MF 20% 16V	D36	8-719-911-19	DIODE 1SS119	
C73	1-123-356-00	ELECT	10MF 20% 16V	D37	=>8-719-100-76	DIODE RD18E-B1	
C74	1-123-322-00	ELECT	330MF 20% 16V	D38	=>8-719-100-76	DIODE RD18E-B1	
C75	1-101-004-00	CERAMIC	0.01MF 50V	D39	=>8-719-100-76	DIODE RD18E-B1	
C76	1-108-251-00	MYLAR	0.1MF 10% 50V	D40	=>8-719-100-76	DIODE RD18E-B1	
C78	1-102-106-00	CERAMIC	100PF 10% 50V	D41	8-719-911-19	DIODE 1SS119	
C79	1-101-006-00	CERAMIC	0.047MF 50V	D42	8-719-911-19	DIODE 1SS119	
C80	1-101-006-00	CERAMIC	0.047MF 50V	<u>IC</u>			
C81	1-101-006-00	CERAMIC	0.047MF 50V	IC1	8-759-981-17	IC MB8116E	
C82	1-123-333-00	ELECT	100MF 20% 16V	IC2	8-759-981-17	IC MB8116E	
C84	1-123-356-00	ELECT	10MF 20% 16V	IC3	8-759-981-17	IC MB8116E	
C85	1-101-006-00	CERAMIC	0.047MF 50V	IC4	8-759-981-17	IC MB8116E	
C86	1-123-306-00	ELECT	47MF 20% 10V	IC5	8-759-981-17	IC MB8116E	
C87	1-123-306-00	ELECT	47MF 20% 10V	IC6	8-759-981-17	IC MB8116E	
C88	1-123-306-00	ELECT	47MF 20% 10V	IC7	8-759-981-17	IC MB8116E	
C89	1-101-006-00	CERAMIC	0.047MF 50V	IC8	8-759-974-07	IC SN7407N	
C90	1-101-006-00	CERAMIC	0.047MF 50V	IC9	8-759-981-17	IC MB8116E	
C91	1-123-356-00	ELECT	10MF 20% 16V	IC10	8-759-133-90	IC UPC339C	
C92	1-123-356-00	ELECT	10MF 20% 16V	IC11	8-759-600-16	IC M5G1400P	
<u>DIODE</u>				IC12	8-759-905-54	IC SAA5070	
D1	8-719-911-19	DIODE 1SS119		IC13	8-759-000-00	IC MC6800P	
D2	8-719-911-19	DIODE 1SS119		IC14	8-759-900-04	IC SN74LS04N	
D3	8-719-911-19	DIODE 1SS119		IC15	8-759-245-20	IC TC4520BP	
D4	8-719-911-19	DIODE 1SS119		IC16	8-759-901-95	IC 74LS195AN	
D5	8-719-911-19	DIODE 1SS119		IC17	8-759-901-07	IC SN74LS107AN	
D6	8-719-911-19	DIODE 1SS119		IC18	8-759-900-08	IC SN74LS08N	
D7	8-719-911-19	DIODE 1SS119		IC19	8-759-900-04	IC SN74LS04N	
D8	8-719-911-19	DIODE 1SS119		IC20	8-759-901-56	IC SN74LS156N	
D9	=> 8-719-422-21	DIODE 1T22AM		IC21	8-759-901-53	IC SN74LS153N	
D10	=> 8-719-422-21	DIODE 1T22AM					
D12	8-719-911-19	DIODE 1SS119					

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
IC22	8-759-901-53	IC SN74LS153N		<b>RESISTOR</b>			
IC23	8-759-901-53	IC SN74LS153N		R1	1-246-783-00	CARBON 1K	1/8W
IC24	8-759-900-32	IC SN74LS32N		R2	1-246-783-00	CARBON 1K	1/8W
IC25	8-759-900-10	IC SN74LS10N		R3	1-246-783-00	CARBON 1K	1/8W
IC26	8-759-900-74	IC SN74LS74AN		R4	1-246-783-00	CARBON 1K	1/8W
IC27	8-759-901-53	IC SN74LS153N		R5	1-202-723-00	COMPOSITION 2.2M 10%	1/2W
IC28	8-759-903-93	IC SN74LS393N		R6	1-246-453-00	CARBON 150 5%	1/4W
IC29	8-759-900-83	IC SN74LS83AN		R7	1-246-453-00	CARBON 150 5%	1/4W
IC30	8-759-950-20	IC SAA5020		R8	1-246-785-00	CARBON 1.5K	1/8W
IC31	8-759-950-50	IC SAA5050		R9	1-246-457-00	CARBON 220 5%	1/4W
IC32	8-759-760-04	IC MBM2764-25		R10	1-246-451-00	CARBON 120 5%	1/4W
IC33	8-759-750-19	IC 2732A-35Z		R11	1-246-783-00	CARBON 1K	1/8W
IC34	8-759-903-74	IC SN74LS374N		R12	1-246-789-00	CARBON 3.3K	1/8W
IC35	8-759-903-65	IC 74LS365AN		R13	1-246-790-00	CARBON 3.9K	1/8W
IC36	8-759-905-55	IC NE555N		R14	1-246-780-00	CARBON 560	1/8W
IC37	8-759-600-16	IC M5G1400P		R15	1-246-789-00	CARBON 3.3K	1/8W
IC38	8-759-340-53	IC HD14053BP		R16	1-246-779-00	CARBON 470	1/8W
IC39	8-759-951-88	IC SN75188N		R17	1-246-780-00	CARBON 560	1/8W
IC40	8-759-245-20	IC TC4520BP		R18	1-246-789-00	CARBON 3.3K	1/8W
<b>COIL</b>				R20	1-246-780-00	CARBON 560	1/8W
L1	1-407-685-00	MICRO INDUCTOR 2.2UH		R21	1-246-779-00	CARBON 470	1/8W
<b>CONNECTOR</b>				R22	1-246-779-00	CARBON 470	1/8W
M1	1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P		R23	1-246-788-00	CARBON 2.7K	1/8W
M2	1-560-125-00	PLUG, CONNECTOR (2.5MM) 5P		R27	1-246-853-00	CARBON 6.2K	1/8W
M3	1-560-126-00	PLUG, CONNECTOR (2.5MM) 6P		R28	1-246-783-00	CARBON 1K	1/8W
M4	1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P		R29	1-246-779-00	CARBON 470	1/8W
M5	1-560-126-00	PLUG, CONNECTOR (2.5MM) 6P		R30	1-246-853-00	CARBON 6.2K	1/8W
M6	1-560-125-00	PLUG, CONNECTOR (2.5MM) 5P		R31	1-246-792-00	CARBON 5.6K	1/8W
M10	1-561-980-21	SOCKET, CONNECTOR 25P		R36	1-246-788-00	CARBON 2.7K	1/8W
<b>TRANSISTOR</b>				R37	1-246-786-00	CARBON 1.8K	1/8W
Q1	=>8-729-177-32	TRANSISTOR 2SD773		R39	1-246-453-00	CARBON 150 5%	1/4W
Q2	=>8-729-177-32	TRANSISTOR 2SD773		R40	1-246-453-00	CARBON 150 5%	1/4W
Q3	=>8-729-117-54	TRANSISTOR 2SA1175		R41	1-247-046-00	CARBON 270K	1/8W
Q4	=>8-729-178-54	TRANSISTOR 2SC2785		R42	1-246-797-00	CARBON 15K	1/8W
Q7	=>8-729-178-54	TRANSISTOR 2SC2785		R43	1-246-797-00	CARBON 15K	1/8W
Q8	=>8-729-178-54	TRANSISTOR 2SC2785		R44	1-246-457-00	CARBON 220 5%	1/4W
Q9	=>8-729-178-54	TRANSISTOR 2SC2785		R45	1-246-451-00	CARBON 120 5%	1/4W
Q10	=>8-729-178-54	TRANSISTOR 2SC2785		R46	1-246-771-00	CARBON 100	1/8W
Q11	=>8-729-178-54	TRANSISTOR 2SC2785		R47	1-246-457-00	CARBON 220 5%	1/4W
Q12	=>8-729-178-54	TRANSISTOR 2SC2785		R49	1-246-791-00	CARBON 4.7K	1/8W
Q13	=>8-729-178-54	TRANSISTOR 2SC2785		R50	1-246-783-00	CARBON 1K	1/8W
Q14	=>8-729-178-54	TRANSISTOR 2SC2785		R51	1-246-785-00	CARBON 1.5K	1/8W
Q15	=>8-729-178-54	TRANSISTOR 2SC2785		R53	1-246-465-00	CARBON 470 5%	1/4W
Q16	=>8-729-178-54	TRANSISTOR 2SC2785		R54	1-246-457-00	CARBON 220 5%	1/4W
Q17	=>8-729-178-54	TRANSISTOR 2SC2785		R55	1-246-457-00	CARBON 220 5%	1/4W
Q18	=>8-729-178-54	TRANSISTOR 2SC2785		R56	1-246-457-00	CARBON 220 5%	1/4W
Q19	=>8-729-178-54	TRANSISTOR 2SC2785		R57	1-246-796-00	CARBON 12K	1/8W
Q20	=>8-729-178-54	TRANSISTOR 2SC2785		R58	1-246-789-00	CARBON 3.3K	1/8W
Q21	=>8-729-178-54	TRANSISTOR 2SC2785		R59	1-246-787-00	CARBON 2.2K	1/8W
				R60	1-214-148-00	METAL 4.7K 1%	1/4W
				R61	1-246-497-00	CARBON 10K 5%	1/4W
				R62	1-246-804-00	CARBON 56K	1/8W

No.	Part No.	Description	Remark		
R63	1-246-485-00	CARBON	3.3K	5%	1/4W
R64	1-246-789-00	CARBON	3.3K		1/8W
R65	1-246-789-00	CARBON	3.3K		1/8W
R66	1-246-775-00	CARBON	220		1/8W
R67	1-246-775-00	CARBON	220		1/8W
R68	1-246-775-00	CARBON	220		1/8W
R69	1-246-799-00	CARBON	22K		1/8W
R70	1-246-807-00	CARBON	100K		1/8W
R71	1-246-799-00	CARBON	22K		1/8W
R72	1-246-799-00	CARBON	22K		1/8W
R73	1-246-789-00	CARBON	3.3K		1/8W
R74	1-246-789-00	CARBON	3.3K		1/8W
R75	1-246-795-00	CARBON	10K		1/8W
R76	1-246-793-00	CARBON	6.8K		1/8W
R77	1-246-799-00	CARBON	22K		1/8W
R78	1-246-795-00	CARBON	10K		1/8W
R79	1-246-861-00	CARBON	30K		1/8W
R80	1-246-800-00	CARBON	27K		1/8W
R81	1-246-805-00	CARBON	68K		1/8W
R82	1-246-789-00	CARBON	3.3K		1/8W
R83	1-246-795-00	CARBON	10K		1/8W
R84	1-246-807-00	CARBON	100K		1/8W
R85	1-246-801-00	CARBON	33K		1/8W
R86	1-246-793-00	CARBON	6.8K		1/8W
R87	1-246-789-00	CARBON	3.3K		1/8W
R88	1-246-795-00	CARBON	10K		1/8W
R90	1-246-799-00	CARBON	22K		1/8W
R91	1-246-795-00	CARBON	10K		1/8W
R92	1-246-802-00	CARBON	39K		1/8W
R93	1-246-797-00	CARBON	15K		1/8W
R97	1-246-789-00	CARBON	3.3K		1/8W
R100	1-246-787-00	CARBON	2.2K		1/8W
R101	1-246-789-00	CARBON	3.3K		1/8W
R102	1-246-787-00	CARBON	2.2K		1/8W
R103	1-246-493-00	CARBON	6.8K	5%	1/4W
R104	1-246-493-00	CARBON	6.8K	5%	1/4W
R105	1-246-789-00	CARBON	3.3K		1/8W
R107	1-246-465-00	CARBON	470	5%	1/4W
R109	1-246-807-00	CARBON	100K		1/8W
R111	1-246-789-00	CARBON	3.3K		1/8W
R115	1-246-783-00	CARBON	1K		1/8W
R116	1-246-795-00	CARBON	10K		1/8W
R117	1-246-783-00	CARBON	1K		1/8W
R118	1-246-783-00	CARBON	1K		1/8W
R119	1-246-783-00	CARBON	1K		1/8W
R120	1-246-775-00	CARBON	220		1/8W
R121	1-246-775-00	CARBON	220		1/8W
R122	1-246-762-00	CARBON	18		1/8W
R123	1-246-457-00	CARBON	220	5%	1/4W
R124	1-246-457-00	CARBON	220	5%	1/4W
R125	1-246-457-00	CARBON	220	5%	1/4W

No.	Part No.	Description	Remark		
<u>VARIABLE RESISTOR</u>					
RV1	1-226-135-00	RES, ADJ, CARBON 4.7K			
RV2	1-226-135-00	RES, ADJ, CARBON 4.7K			
RV3	1-226-135-00	RES, ADJ, CARBON 4.7K			
RV4	1-226-850-00	RES, ADJ, CARBON 4.7K			
RV5	1-226-850-00	RES, ADJ, CARBON 4.7K			
<u>SWITCH</u>					
SW1	1-552-430-21	SWITCH, SLIDE			
<u>CRYSTAL</u>					
X1	1-527-828-00	OSCILLATOR, CRYSTAL			
*****					
	♣:1-607-261-00	R BOARD			
		*****			
<u>IC</u>					
IC802	8-759-171-05	IC μPC7805H			
IC803	8-759-171-05	IC μPC7805H			
*****					
	♣:A-1330-368-A	C BOARD, COMPLETE			
		*****			
	♣:1-607-259-13	C BOARD			
	1-509-545-00	SOCKET, CRT MOLD			
<u>CONNECTOR</u>					
C1	♣:1-508-784-00	1P PLUG			
<u>CAPACITOR</u>					
C701	1-102-223-00	CERAMIC	0.0047MF	20%	1.6KV
C702	1-102-050-00	CERAMIC	0.01MF	99%	500V
C703	1-102-002-00	CERAMIC	680PF	10%	500V
C704	1-121-999-00	ELECT	10MF		160V
<u>DIODE</u>					
D701 =>	8-719-300-76	DIODE RH1A			
D702 =>	8-719-300-76	DIODE RH1A			
D703 =>	8-719-300-76	DIODE RH1A			
<u>COIL</u>					
L701	1-407-709-00	MICRO INDUCTOR 220UH			
L702	1-407-697-00	MICRO INDUCTOR 22UH			

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
<u>NEON LAMP</u>							
NL701	1-519-108-XX	LAMP, NEON ASSY		R402	1-246-473-00	CARBON 1K 5% 1/4W	
<u>TRANSISTOR</u>				R403	1-246-492-00	CARBON 6.2K 5% 1/4W	
Q701	8-729-322-78	TRANSISTOR 2SC2278		R404	1-246-473-00	CARBON 1K 5% 1/4W	
Q702	8-729-322-78	TRANSISTOR 2SC2278		<u>VARIABLE RESISTOR</u>			
Q703	8-729-322-78	TRANSISTOR 2SC2278		RV400	1-228-351-00	RES, VAR, SLIDE 20K	
<u>RESISTOR</u>				RV401	1-226-870-00	RES, VAR, SLIDE 50K	
R701	1-246-457-00	CARBON 220 5% 1/4W		*****			
R702	1-246-457-00	CARBON 220 5% 1/4W		●:A-1394-022-A L BOARD, COMPLETE			
R703	1-246-457-00	CARBON 220 5% 1/4W		*****			
R704	1-246-497-00	CARBON 10K 5% 1/4W		<u>CAPACITOR</u>			
R705	1-246-497-00	CARBON 10K 5% 1/4W		C001	1-130-566-00	MYLAR 2.2MF 10% 250V	
R706	1-246-497-00	CARBON 10K 5% 1/4W		C002	1-123-356-00	ELECT 10MF 20% 16V	
R707	1-213-155-00	METAL 10K 5% 1W	F	C003	1-108-389-00	MYLAR 0.1MF 10% 100V	
R708	1-213-155-00	METAL 10K 5% 1W	F	C004	1-123-321-00	ELECT 220MF 20% 16V	
R709	1-213-155-00	METAL 10K 5% 1W	F	C005	1-108-423-00	MYLAR 0.015MF 10% 400V	
R710	1-202-581-00	COMPOSITION 2.2K 10% 1/2W		C006	1-108-389-00	MYLAR 0.1MF 10% 100V	
R711	1-202-581-00	COMPOSITION 2.2K 10% 1/2W		C007	1-129-714-00	MYLAR 0.01MF 10% 400V	
R712	1-202-581-00	COMPOSITION 2.2K 10% 1/2W		C008	1-129-714-00	MYLAR 0.01MF 10% 400V	
R713	1-202-723-00	COMPOSITION 2.2M 10% 1/2W		C009	1-108-423-00	MYLAR 0.015MF 10% 400V	
R714	1-202-723-00	COMPOSITION 2.2M 10% 1/2W		C010	1-108-393-00	MYLAR 0.22MF 10% 100V	
R715	1-202-621-00	COMPOSITION 100K 10% 1/2W		C011	1-108-389-00	MYLAR 0.1MF 10% 100V	
R716	1-202-645-00	COMPOSITION 1M 10% 1/2W		C012	1-108-423-00	MYLAR 0.015MF 10% 400V	
R717	1-244-929-00	COMPOSITION 220K 10% 1/2W		C013	1-161-317-00	CERAMIC 330PF 10% 50V	
<u>VARIABLE RESISTOR</u>				C014	1-161-383-00	CERAMIC 0.0047MF 10% 50V	
RV701	1-226-659-21	RES, ADJ, METAL GLAZE 7.5M		C015	1-161-381-00	CERAMIC 0.0022MF 10% 50V	
<u>SPARK GAP</u>				C018	1-108-385-00	MYLAR 0.047MF 10% 250V	
SG701	1-519-063-XX	DISCHARGING GAP		C019	1-161-383-00	CERAMIC 0.0047MF 10% 50V	
SG702	1-519-063-XX	DISCHARGING GAP		C020	1-108-393-00	MYLAR 0.22MF 10% 100V	
SG703	1-519-063-XX	DISCHARGING GAP		C021	1-108-389-00	MYLAR 0.1MF 10% 100V	
SG704	1-519-063-XX	DISCHARGING GAP		C022	1-161-265-00	CERAMIC 33PF 5% 50V	
*****				C023	1-123-328-00	ELECT 4.7MF 20% 25V	
●:1-607-260-00 H BOARD				C024	1-123-328-00	ELECT 4.7MF 20% 25V	
*****				C025	1-129-714-00	MYLAR 0.01MF 10% 400V	
<u>DIODE</u>				C026	1-123-328-00	ELECT 4.7MF 20% 25V	
D400	8-719-822-06	DIODE TLG206		C027	1-123-308-00	ELECT 220MF 20% 10V	
<u>RESISTOR</u>				C028	1-123-310-00	ELECT 470MF 20% 10V	
R400	1-246-475-00	CARBON 1.2K 5% 1/4W		C029	1-108-389-00	MYLAR 0.1MF 10% 100V	
R401	1-246-481-00	CARBON 2.2K 5% 1/4W		C032	1-129-714-00	MYLAR 0.01MF 10% 400V	
				C033	1-123-356-00	ELECT 10MF 20% 16V	
				C034	1-130-566-00	MYLAR 2.2MF 10% 250V	
				C035	1-123-356-00	ELECT 10MF 20% 16V	
				C036	1-130-247-00	MYLAR 0.033MF 10% 250V	
				<u>DIODE</u>			
				D001	=>8-719-815-55	DIODE 1S1555	
				D002	=>8-719-815-55	DIODE 1S1555	



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
D003	=>8-719-815-55	DIODE 1S1555		R016	1-215-180-00	METAL 15K 5% 1/4W	
D004	=>8-719-815-55	DIODE 1S1555		R017	1-215-169-00	METAL 5.1K 5% 1/4W	
D005	=>8-719-815-55	DIODE 1S1555		R018	1-215-169-00	METAL 5.1K 5% 1/4W	
D006	=>8-719-815-55	DIODE 1S1555		R019	1-215-169-00	METAL 5.1K 5% 1/4W	
D007	=>8-719-815-55	DIODE 1S1555		R020	1-215-170-00	METAL 5.6K 5% 1/4W	
D008	=>8-719-815-55	DIODE 1S1555		R021	1-215-169-00	METAL 5.1K 5% 1/4W	
D009	=>8-719-815-55	DIODE 1S1555		R022	1-215-170-00	METAL 5.6K 5% 1/4W	
D010	=>8-719-200-02	DIODE 10E2		R023	1-215-204-00	METAL 150K 5% 1/4W	
D011	=>8-719-200-02	DIODE 10E2		R024	1-215-176-00	METAL 10K 5% 1/4W	
D012	=>8-719-200-02	DIODE 10E2		R025	1-215-176-00	METAL 10K 5% 1/4W	
D013	=>8-719-200-02	DIODE 10E-2		R026	1-215-176-00	METAL 10K 5% 1/4W	
D014	=>8-719-931-15	DIODE EQB01-15		R027	1-215-149-81	METAL 750 5% 1/4W	
<u>IC</u>				R028	1-215-152-00	METAL 1K 5% 1/4W	
IC001	8-759-132-40	IC UPC324C		R029	1-215-204-00	METAL 150K 5% 1/4W	
IC002	8-759-132-40	IC UPC324C		R030	1-215-198-00	METAL 82K 5% 1/4W	
<u>CONNECTOR</u>				R031	1-215-204-00	METAL 150K 5% 1/4W	
L1	●:1-560-125-00	PLUG, CONNECTOR (2.5MM) 5P		R036	1-215-182-00	METAL 18K 5% 1/4W	
L2	●:1-560-126-00	PLUG, CONNECTOR (2.5MM) 6P		R037	1-215-200-00	METAL 100K 5% 1/4W	
L3	●:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P		R038	1-215-184-00	METAL 22K 5% 1/4W	
L4	●:1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)		R039	1-215-170-00	METAL 5.6K 5% 1/4W	
L5	●:1-508-784-00	1P PLUG		R040	1-202-661-00	COMPOSITION 4.7M 5% 1/2W	
<u>TRANSISTOR</u>				R041	1-202-649-15	COMPOSITION 1.5M 5% 1/2W	
Q001	=>8-729-663-47	TRANSISTOR 2SC1364		R042	1-215-176-00	METAL 10K 5% 1/4W	
Q002	=>8-729-663-47	TRANSISTOR 2SC1364		R043	1-202-649-15	COMPOSITION 1.5M 5% 1/2W	
Q003	=>8-729-612-77	TRANSISTOR 2SA1027R		R044	1-215-220-00	METAL 680K 5% 1/4W	
Q004	=>8-729-612-77	TRANSISTOR 2SA1027R		R045	1-215-192-00	METAL 47K 5% 1/4W	
Q005	=>8-729-663-47	TRANSISTOR 2SC1364		R046	1-215-198-00	METAL 82K 5% 1/4W	
Q006	=>8-729-663-47	TRANSISTOR 2SC1364		R047	1-215-204-00	METAL 150K 5% 1/4W	
Q007	=>8-729-663-47	TRANSISTOR 2SC1364		R048	1-215-176-00	METAL 10K 5% 1/4W	
Q008	=>8-729-663-47	TRANSISTOR 2SC1364		R049	1-215-200-00	METAL 100K 5% 1/4W	
Q009	=>8-729-663-47	TRANSISTOR 2SC1364		R050	1-215-160-00	METAL 2.2K 5% 1/4W	
Q010	=>8-729-612-77	TRANSISTOR 2SA1027R		R051	1-215-152-00	METAL 1K 5% 1/4W	
Q011	=>8-729-663-47	TRANSISTOR 2SC1364		R052	1-215-172-00	METAL 6.8K 5% 1/4W	
Q012	=>8-760-413-10	TRANSISTOR 2SC1475		R053	1-215-152-00	METAL 1K 5% 1/4W	
Q013	=>8-729-663-47	TRANSISTOR 2SC1364		R054	1-215-172-00	METAL 6.8K 5% 1/4W	
<u>RESISTOR</u>				R057	1-215-169-00	METAL 5.1K 5% 1/4W	
R001	1-244-847-00	CARBON 82 5% 1/2W		R058	1-215-128-00	METAL 100 5% 1/4W	
R002	1-215-168-00	METAL 4.7K 5% 1/4W		R059	1-215-158-00	METAL 1.8K 5% 1/4W	
R003	1-215-168-00	METAL 4.7K 5% 1/4W		R060	1-215-140-00	METAL 330 5% 1/4W	
R004	1-215-152-00	METAL 1K 5% 1/4W		R061	1-215-152-00	METAL 1K 5% 1/4W	
R005	1-215-178-00	METAL 12K 5% 1/4W		R062	1-215-172-00	METAL 6.8K 5% 1/4W	
R007	1-215-186-00	METAL 27K 5% 1/4W		R063	1-244-839-00	CARBON 39 5% 1/2W	
R008	1-215-160-00	METAL 2.2K 5% 1/4W		R064	1-215-096-00	METAL 4.7 5% 1/4W	
R009	1-215-167-00	METAL 4.3K 5% 1/4W		R065	1-215-096-00	METAL 4.7 5% 1/4W	
R010	1-215-180-00	METAL 15K 5% 1/4W		R066	1-215-132-00	METAL 150 5% 1/4W	
R011	1-215-176-00	METAL 10K 5% 1/4W		R067	1-244-841-00	CARBON 47 5% 1/2W	
R012	1-215-164-00	METAL 3.3K 5% 1/4W		R068	1-215-198-00	METAL 82K 5% 1/4W	
R013	1-215-188-00	METAL 33K 5% 1/4W		R069	1-215-198-00	METAL 82K 5% 1/4W	
R014	1-215-172-00	METAL 6.8K 5% 1/4W		R070	1-215-178-00	METAL 12K 5% 1/4W	
				R071	1-215-186-00	METAL 27K 5% 1/4W	
				R072	1-215-170-00	METAL 5.6K 5% 1/4W	
				R073	1-215-170-00	METAL 5.6K 5% 1/4W	
				R074	1-215-170-00	METAL 5.6K 5% 1/4W	

No.	Part No.	Description	Remark
R075	1-215-170-00	METAL 5.6K 5% 1/4W	
R076	1-215-174-00	METAL 8.2K 5% 1/4W	

#### RELAY

RL1	1-515-469-00	RELAY, REED	
RL2	1-515-470-00	RELAY, REED	
RL3	1-515-468-00	RELAY, REED	

#### TRANSFORMER

T001	1-437-119-00	TRANSFORMER, LINE ISOLATING	
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1-609-254-00 MG BOARD  
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#### DIODE

D43 =>	8-719-911-19	DIODE 1SS119	
D44 =>	8-719-911-19	DIODE 1SS119	

#### TRANSISTOR

Q5 =>	8-729-178-54	TRANSISTOR 2SC2785	
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#### RESISTOR

R19	1-246-493-00	CARBON 6.8K 5% 1/4W	
R24	1-246-789-00	CARBON 3.3K 1/8W	
R25	1-246-795-00	CARBON 10K 1/8W	
R26	1-246-773-00	CARBON 150 1/8W	

\*\*\*\*\*

#### MISCELLANEOUS \*\*\*\*\*

#### 1-226-891-00 RESISTOR ASSY, HIGH-VOLTAGE

1-425-032-00	MAGNET, DISK; 10mmφ	
1-425-094-00	MAGNET, POTATABLE, DISK; 15mmφ	

#### 1-426-043-00 COIL, DEGAUSSING

1-452-126-11	MAGNET	
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1-509-547-00 3P INLET

#### 1-534-598-XX POWER CORD

1-555-181-22	CONNECTOR ASSY, MINIATURE 4P	
1-555-347-00	CONNECTOR, MINIATURE 1P	
1-555-441-00	CONNECTOR ASSY (LARGE) 3P	

1-555-730-00	CONNECTOR ASSY (2.5MM) 2P	
1-555-838-00	CONNECTOR ASSY (2.5MM) 6P	
1-556-057-81	CONNECTOR ASSY (LARGE) 3P	
1-556-303-00	CABLE (WITH DIN PLUG) 6P	
1-556-396-11	CONNECTOR ASSY (2.5MM) 5P	

#### NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Part No.	Description	Remark
1-561-579-00	JACK, DIN 7P	
1-561-580-00	JACK, DIN 6P	
1-561-665-00	SOCKET, DIN 8P	

#### 1-451-145-00 DEFLECTION YOKE

#### 1-552-503-00 SWITCH, PUSH

SP1 1-502-509-31 SPEAKER

#### 1-439-261-00 TRANSFORMER ASSY, FLYBACK

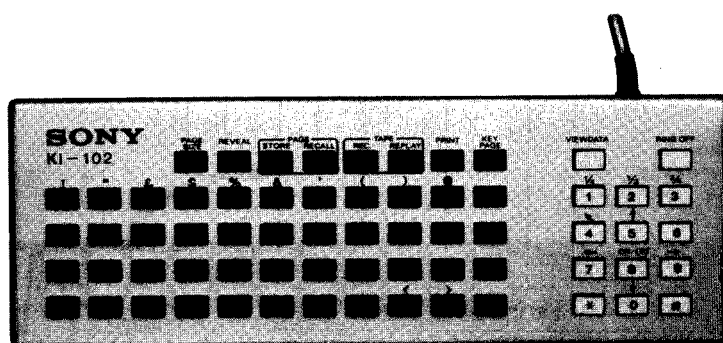
V901 1-8-733-851-05 PICTURE TUBE (220JB22)

#### ACCESSORIES AND PACKING MATERIALS \*\*\*\*\*

A-1009-092-A	PAD COMPLETE ASSY (SA-240), KEY	
4-023-740-00	BAG, PROTECTION	
4-360-225-00	HOOK	
4-360-250-00	CUSHION (UPPER) (ASSY)	
4-360-251-00	CUSHION (LOWER) (ASSY)	
4-360-281-00	LABEL, CONTROL	
4-493-675-51	MANUAL, INSTRUCTION	

# KI-102

## SERVICE MANUAL

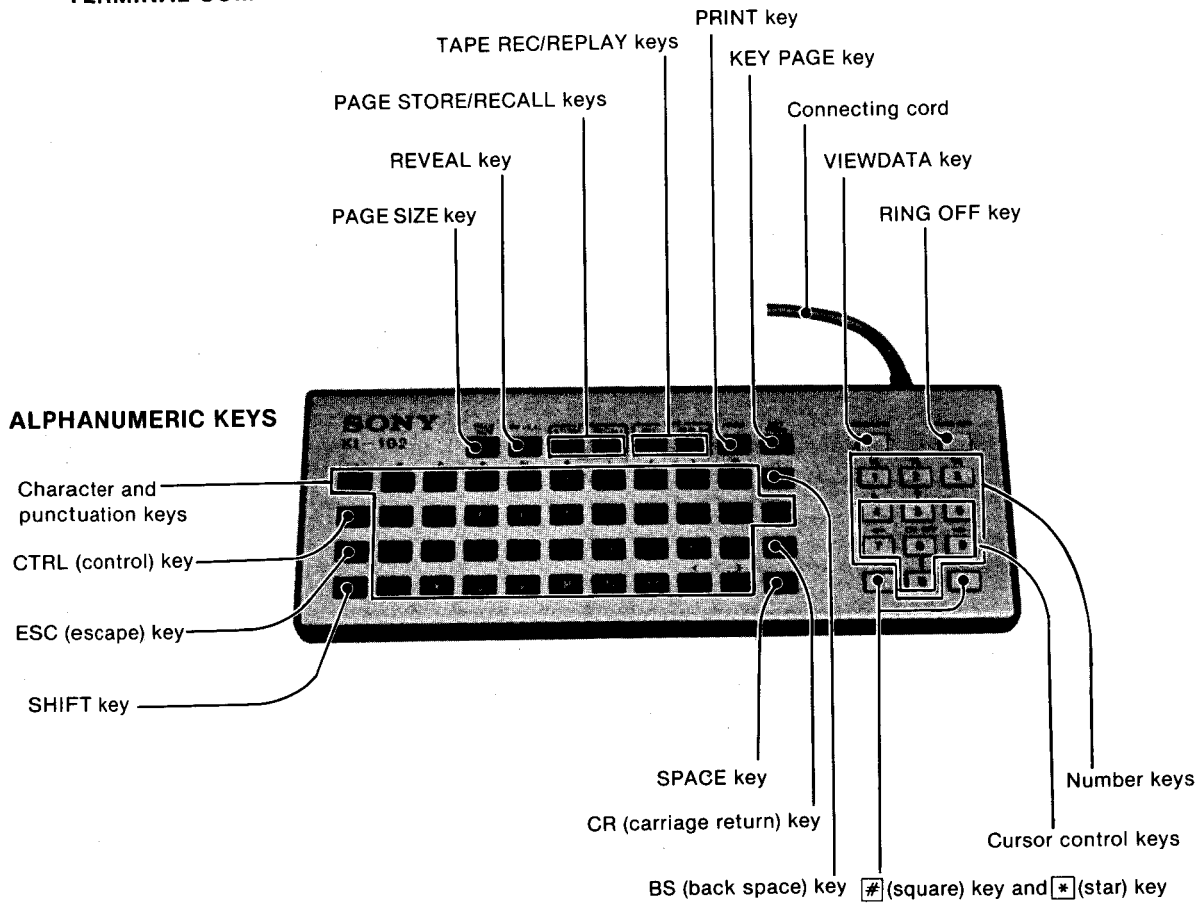


October, 1982

KEYPAD  
**SONY**®

## 1. LOCATION AND FUNCTION OF CONTROLS

### TERMINAL COMMAND KEYS



2. KEY PAGE OPERATION

TO STORE THE KEY PAGE NUMBER

1 Press the POWER switch.


2 Press the KEY PAGE key.

3 Press the  key three times.



4 Press the dial service number key. (Ex. number 1)

Enter DIR Number:

5 Press the page name keys up to 8 characters, then the  key. (Ex. SONY)  
The characters will be displayed in capitals.

Enter DIR Number: 1  
Enter Comment:

6 Press the page number keys up to 16 digits, then the  key. (Ex. 111)

Only numbers can be entered in a space of the PAGE NUMBER.



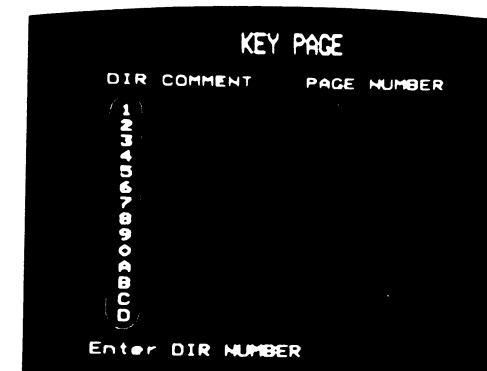
Repeat steps 3 to 6 for the remaining 13 key pages, if required.



TO ACCESS THE KEY PAGE

1 Press the KEY PAGE key in the on-line mode.

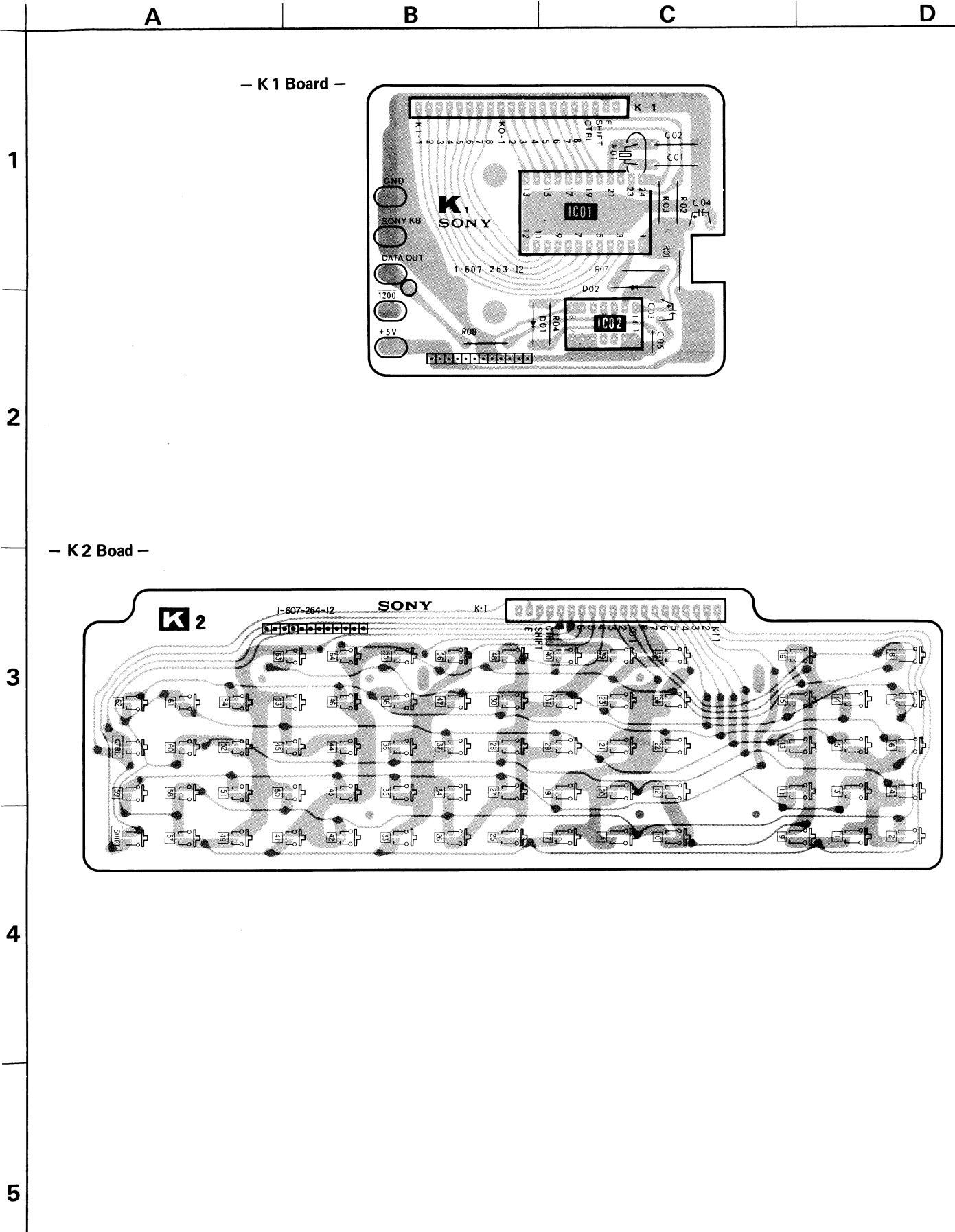
2 Press the dial service number key.  
The indexed page is displayed.



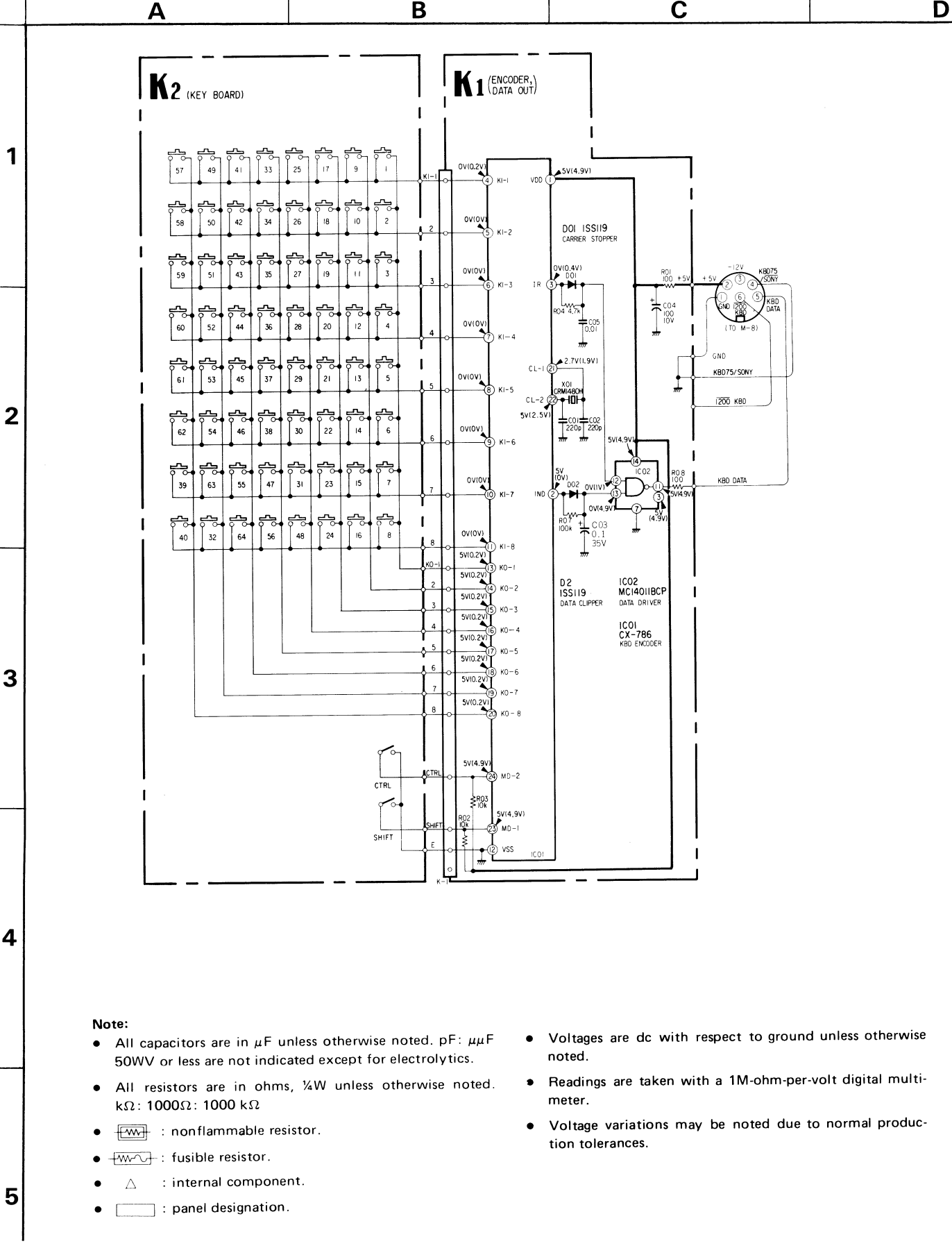
For recalling other pages, first press the KEY PAGE key, then press the desired dial service number key.

3. MOUNTING DIAGRAMS

— Conductor Side —



4. SCHEMATIC DIAGRAM



Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega$ : 1000 $\Omega$ : 1000  $\text{k}\Omega$
- : nonflammable resistor.
- : fusible resistor.
- $\Delta$  : internal component.
- : panel designation.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 1M-ohm-per-volt digital multi-meter.
- Voltage variations may be noted due to normal production tolerances.

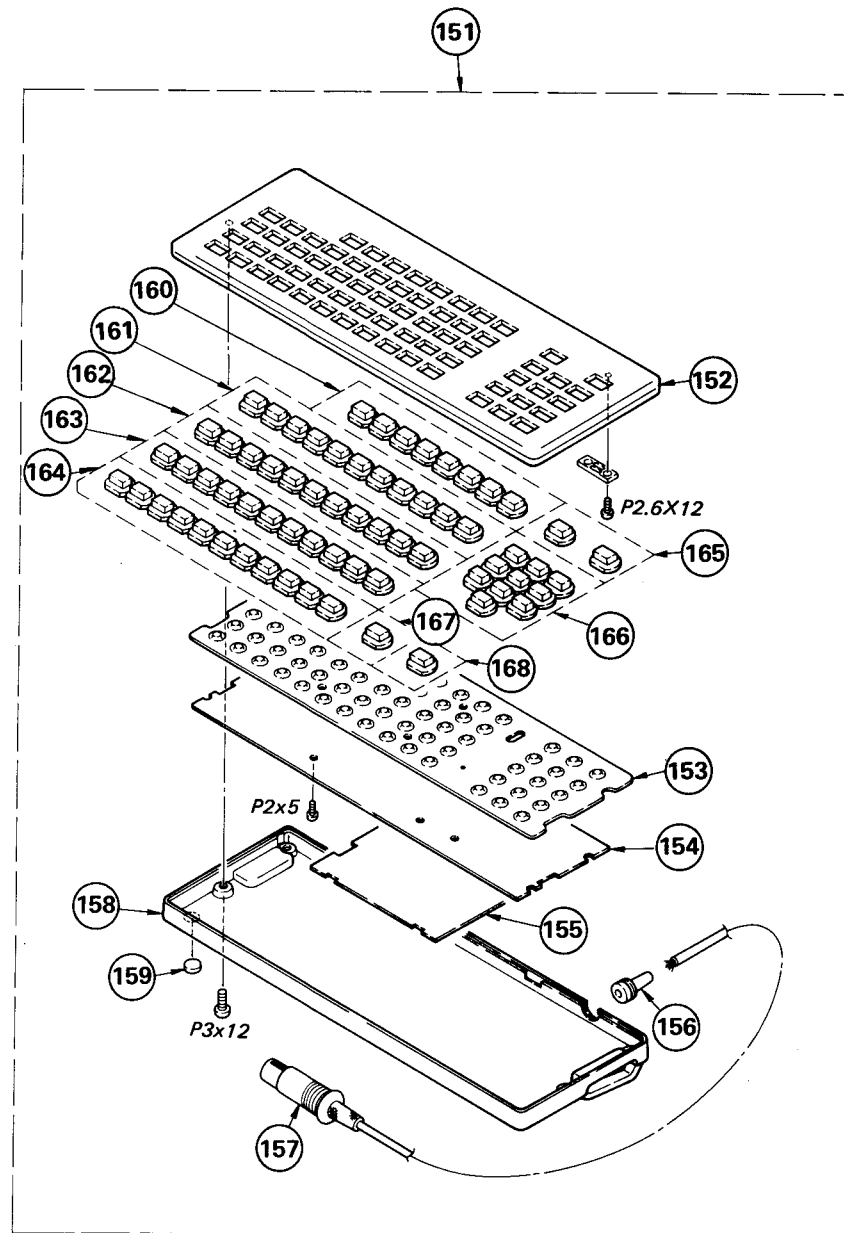
## 5. EXPLODED VIEW

### NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	A-1009-092-A	PAD COMPLETE ASSY (SA-240), KEY		160	X-4360-215-0	KEY TOP (A) ASSY	
152	X-4360-205-0	CASE ASSY, UPPER		161	X-4360-216-0	KEY TOP (B) ASSY	
153	4-360-214-00	SHEET, RUBBER, CONDUCTIVE		162	X-4360-217-0	KEY TOP (C) ASSY	
154	●:1-607-264-00	K2 BOARD		163	X-4360-218-0	KEY TOP (D) ASSY	
155	●:1-607-263-00	K1 BOARD		164	X-4360-219-0	KEY TOP (E) ASSY	
156	3-659-700-00	BUSHING, CORD		165	X-4360-220-0	KEY TOP (F) ASSY	
157	1-556-303-00	CABLE (WITH DIN PLUG) 6P		166	X-4360-221-0	KEY TOP (G) ASSY	
158	4-360-220-00	CASE, LOWER		167	X-4360-222-0	KEY TOP (H) ASSY	
159	4-344-213-00	FOOT		168	X-4360-223-0	KEY TOP (I) ASSY	

## 6. ELECTRICAL PARTS LIST

No.	Part No.	Description	Remark
	●:1-607-263-00	K1 BOARD *****	
<b>CAPACITOR</b>			
C01	1-161-315-00	CERAMIC 220PF	10% 50V
C02	1-161-315-00	CERAMIC 220PF	10% 50V
C03	1-131-341-00	TANTALUM 0.1MF	10% 35V
C04	1-123-307-00	ELECT 100MF	20% 10V
C05	1-108-239-00	MYLAR 0.01MF	10% 50V
<b>DIODE</b>			
D01	8-719-911-19	DIODE 1SS119	
D02	8-719-911-19	DIODE 1SS119	
<b>IC</b>			
IC01	8-759-907-86	IC CX-786	
IC02	=>8-759-240-11	IC TC4011BP	
<b>CONNECTOR</b>			
K1	●:1-508-858-11	CONNECTOR, (PIN)	
<b>RESISTOR</b>			
R01	1-246-449-00	CARBON 100	5% 1/4W
R02	1-246-497-00	CARBON 10K	5% 1/4W
R03	1-246-497-00	CARBON 10K	5% 1/4W
R04	1-246-489-00	CARBON 4.7K	5% 1/4W
R07	1-246-521-00	CARBON 100K	5% 1/4W
R08	1-246-449-00	CARBON 100	5% 1/4W
<b>CRYSTAL</b>			
X01	1-527-476-00	OSCILLATOR, CERAMIC	

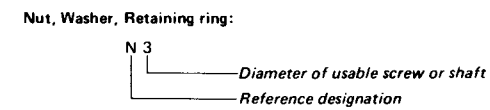
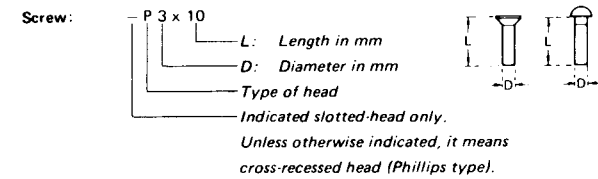
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- CAPACITORS
- MF :  $\mu$ F, PF :  $\mu$ F

- RESISTORS
- All resistors are in ohms
- F : nonflammable

# HARDWARE NOMENCLATURE



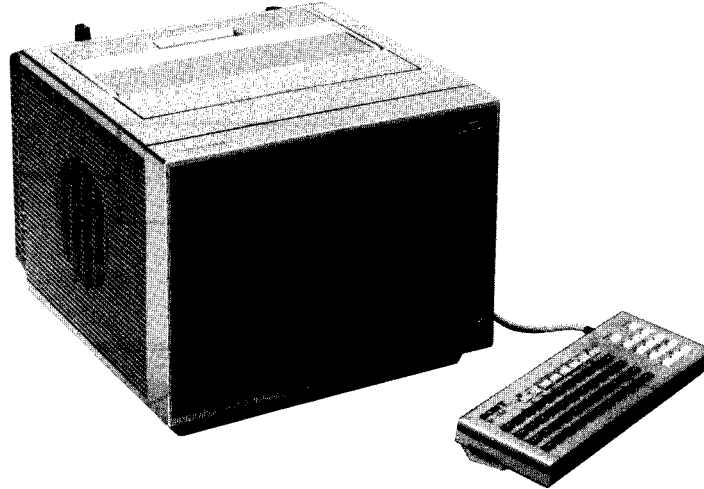
Reference Designation	Shape	Description	Remarks
<b>SCREWS</b>			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

Reference Designation	Shape	Description	Remarks
<b>SELF-TAPPING SCREWS</b>			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
<b>SET SCREWS</b>			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
<b>NUT</b>			
N		nut	
<b>WASHERS</b>			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
<b>RETAINING RINGS</b>			
E		retaining ring	
G		grip-type retaining ring	

# KTX-9000UB / G

## TROUBLE SHOOTING MANUAL

*GERMANY Model*  
*UK Model*



April, 1983

### REPAIR FLOW CHART FOR M AND L BOARDS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	DISPLAY .....	2
	• Picture is not luminous.	
	• Picture is luminous but not normal.	
2.	TEL LINE. ....	6
	• Does not connect with telephone circuit.	
	• Connects with telephone circuit but DATA is not normal.	
3.	TAPE recording/playback .....	8
	• No recording and playback when connected with a tape recorder.	
	• Recording and playback possible but DATA is not normal.	
4.	PRINTER .....	9
	• No recording when connected with printer.	
	• Recording possible but DATA is not normal.	



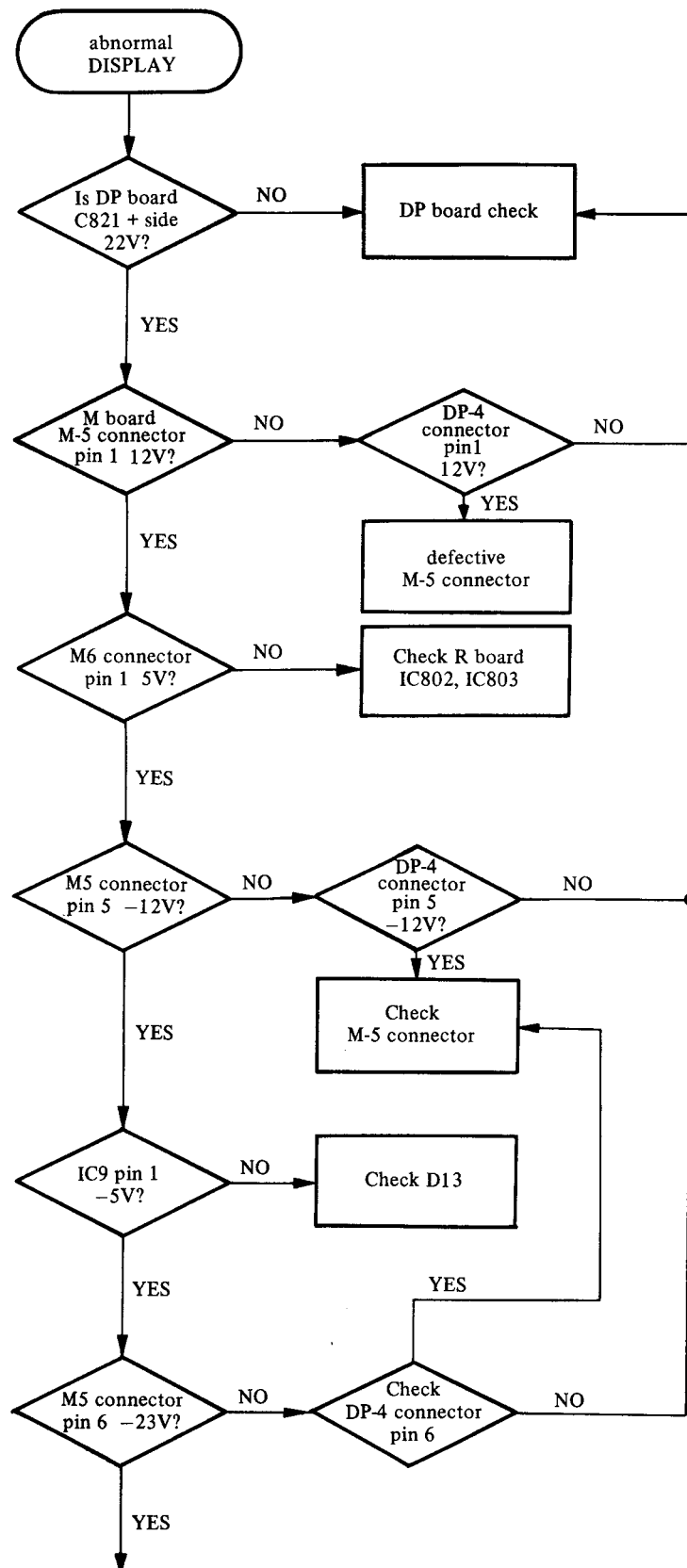
TRINITRON® COLOUR  
VIEWDATA TERMINAL  
**SONY®**

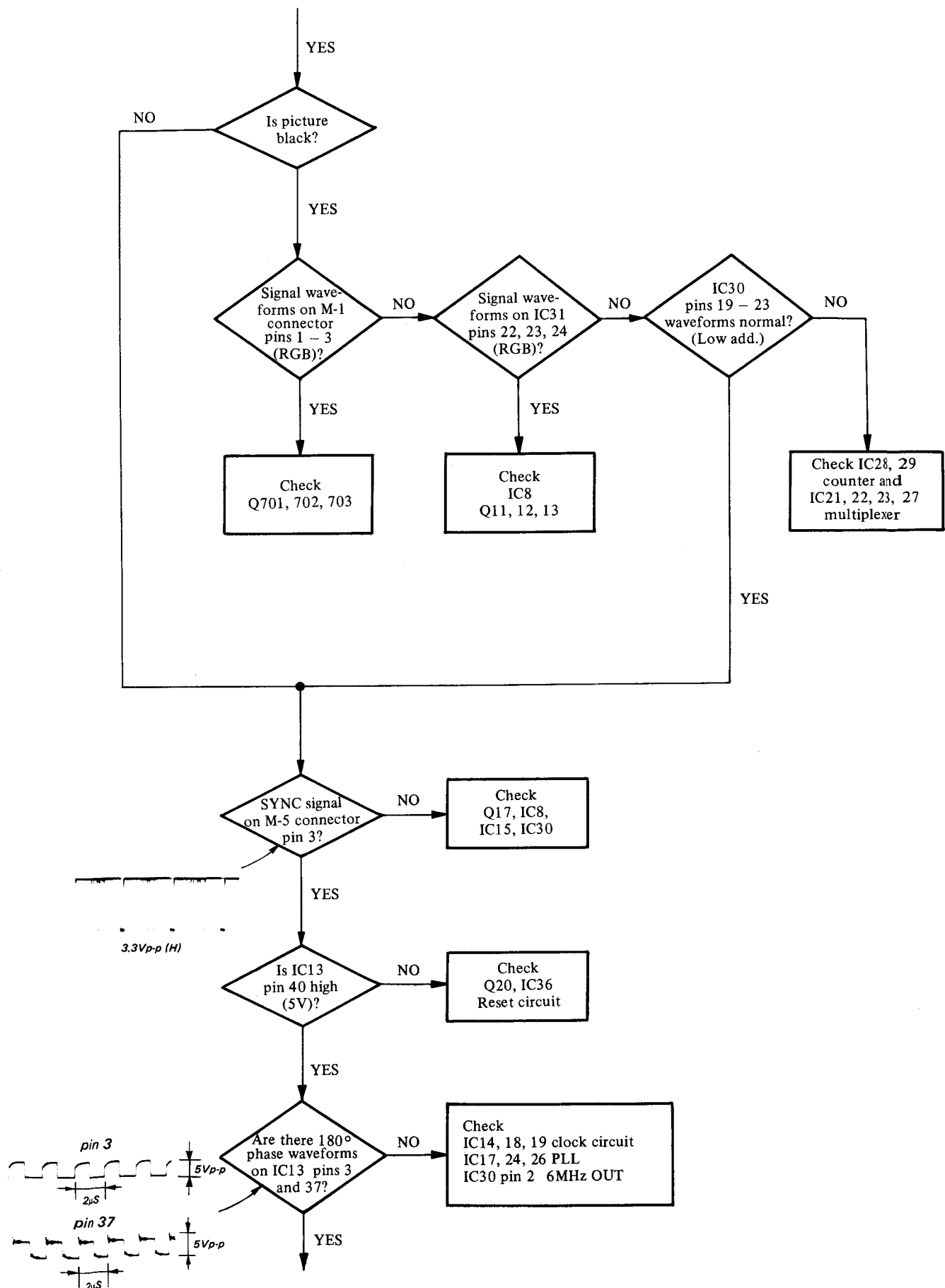
**CTV**

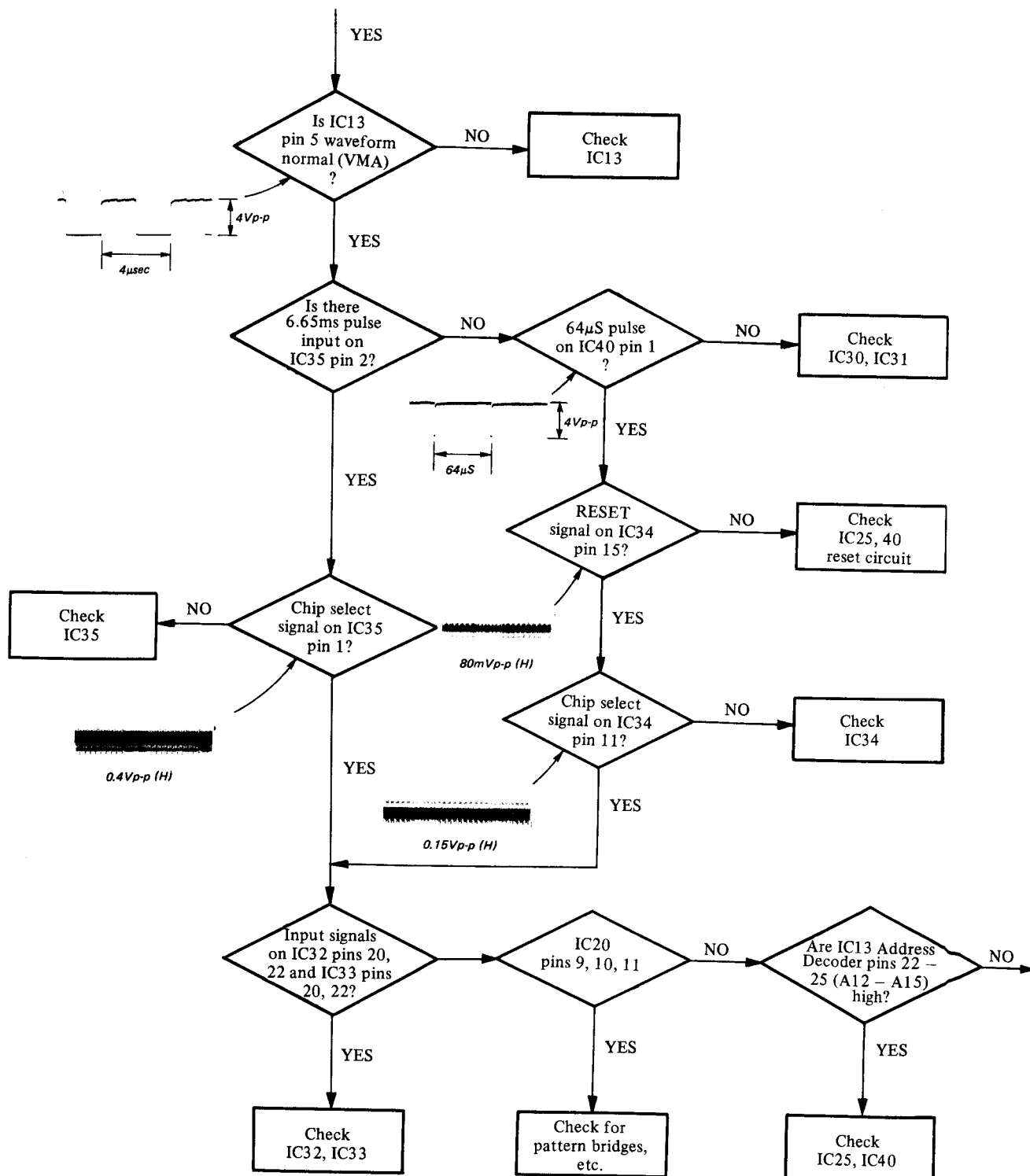
## TROUBLE SHOOTING

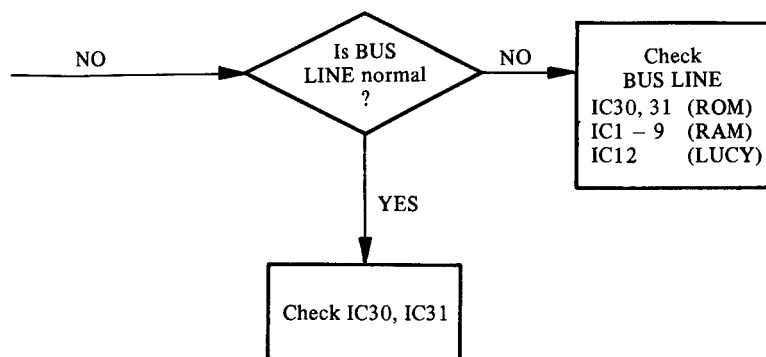
- The waveform and voltage should be the measured value in the "LINE Disconnected" condition.

### 1. DISPLAY

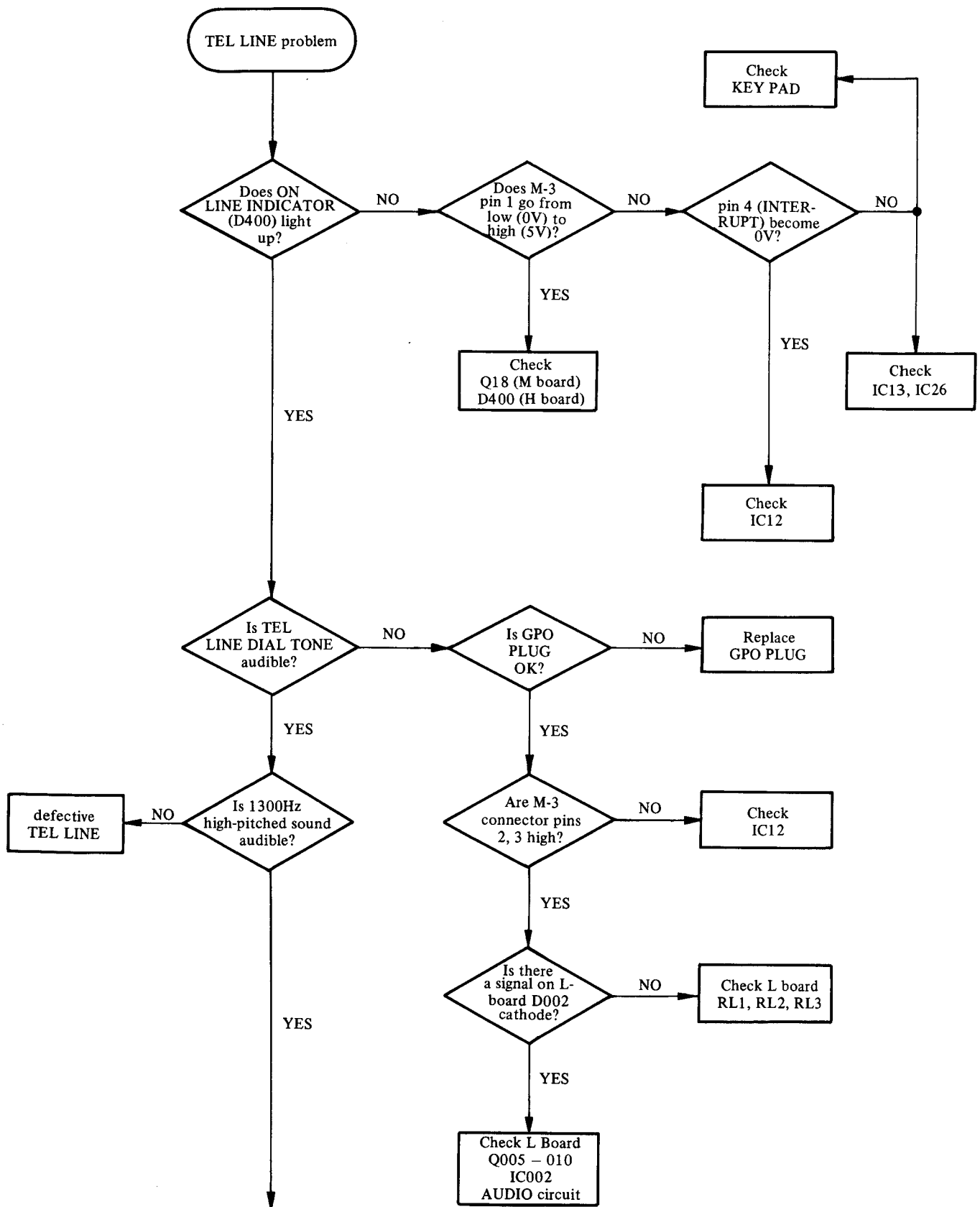


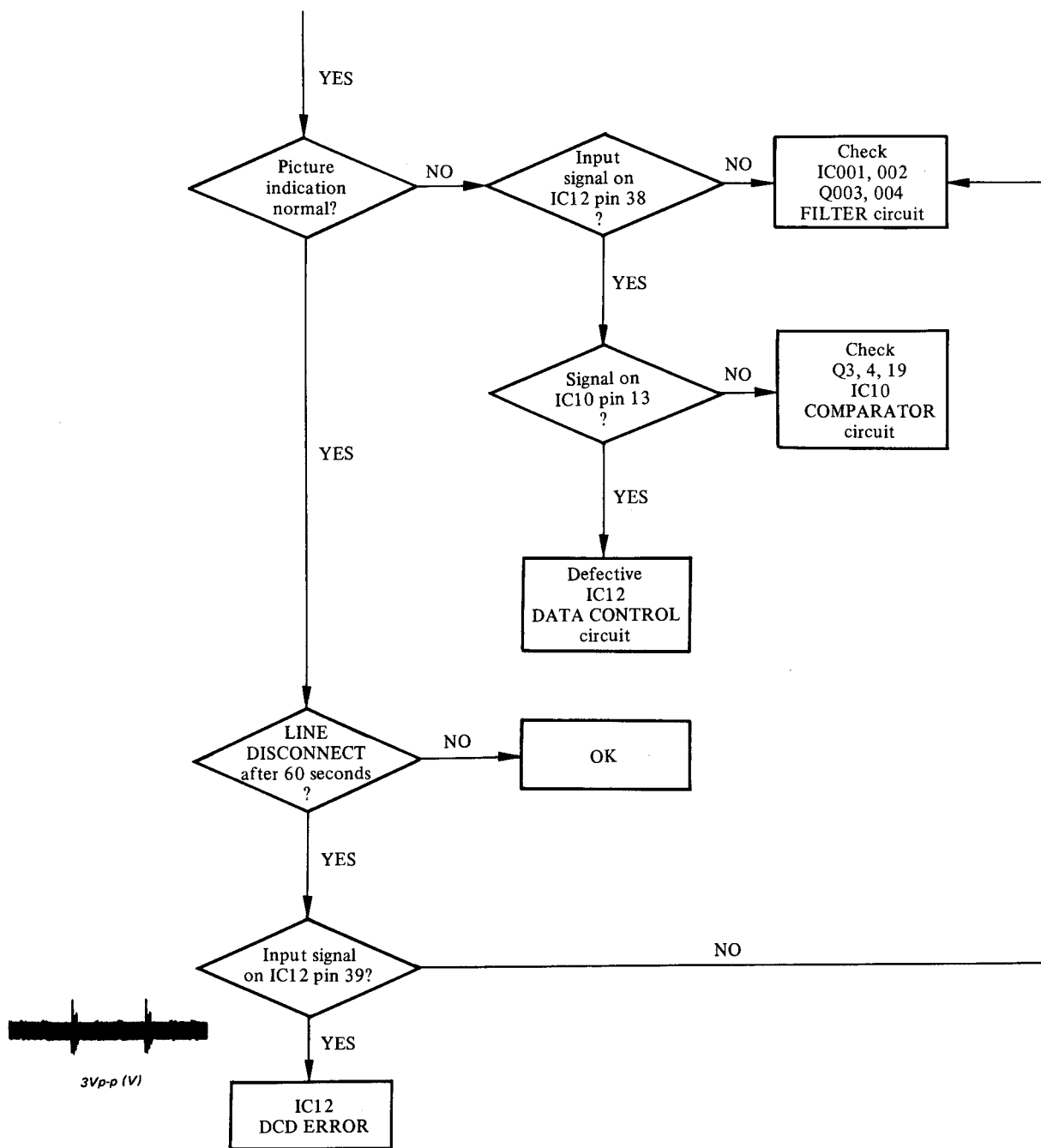




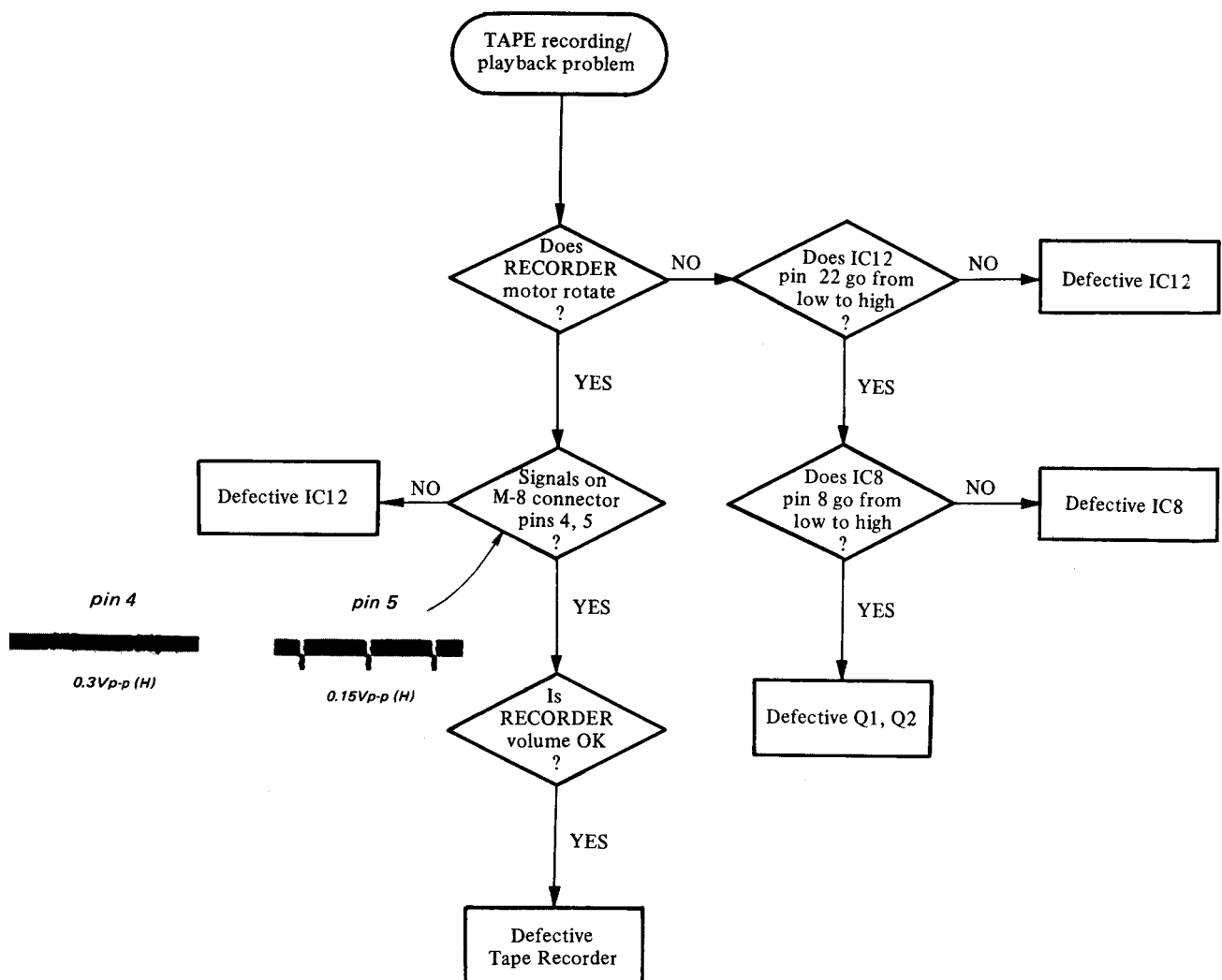


## 2. TEL LINE (UK Model only)

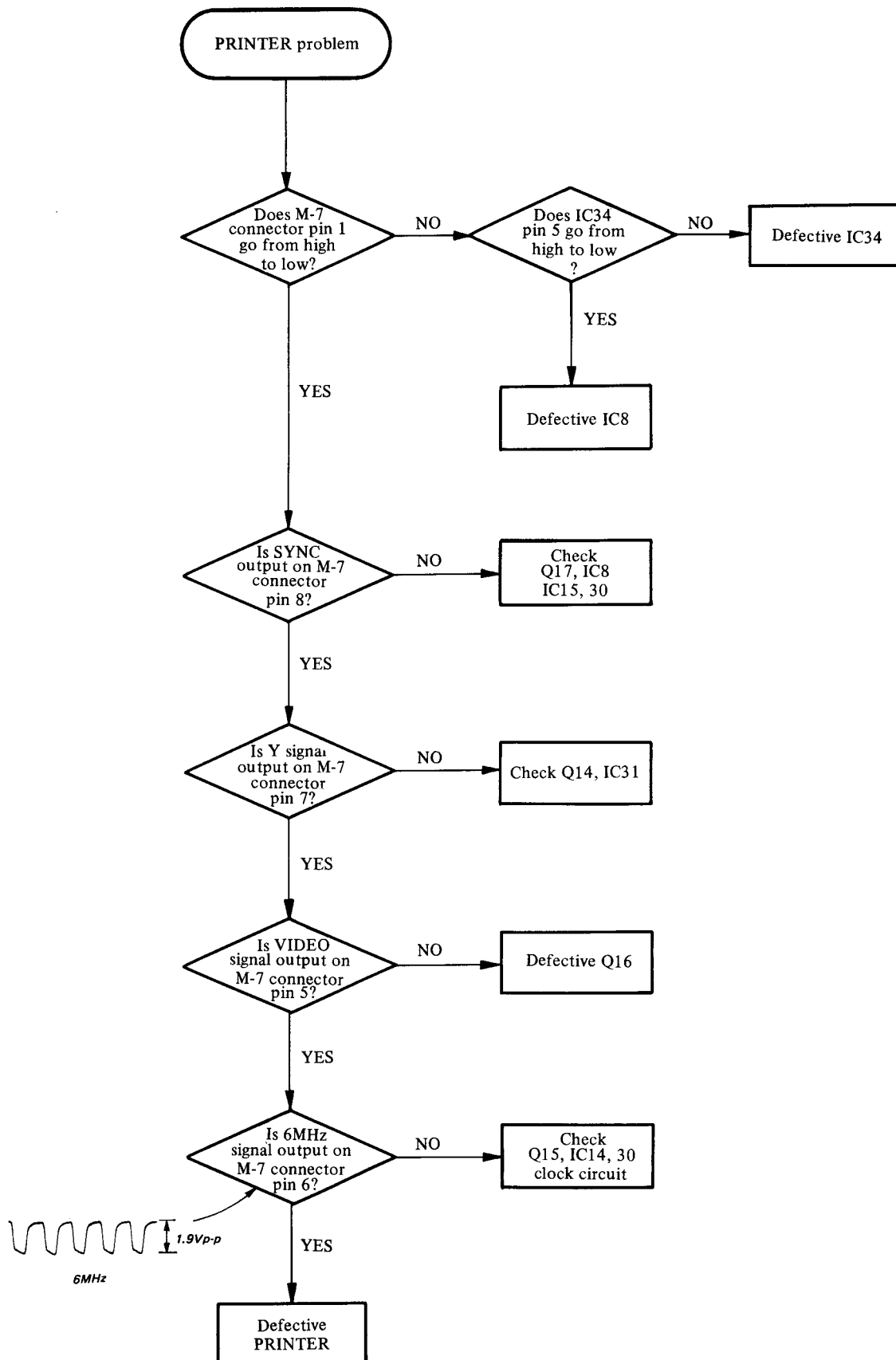




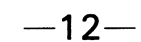
### 3. TAPE RECORDING/PLAYBACK



#### 4. PRINTER

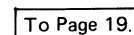


**5**

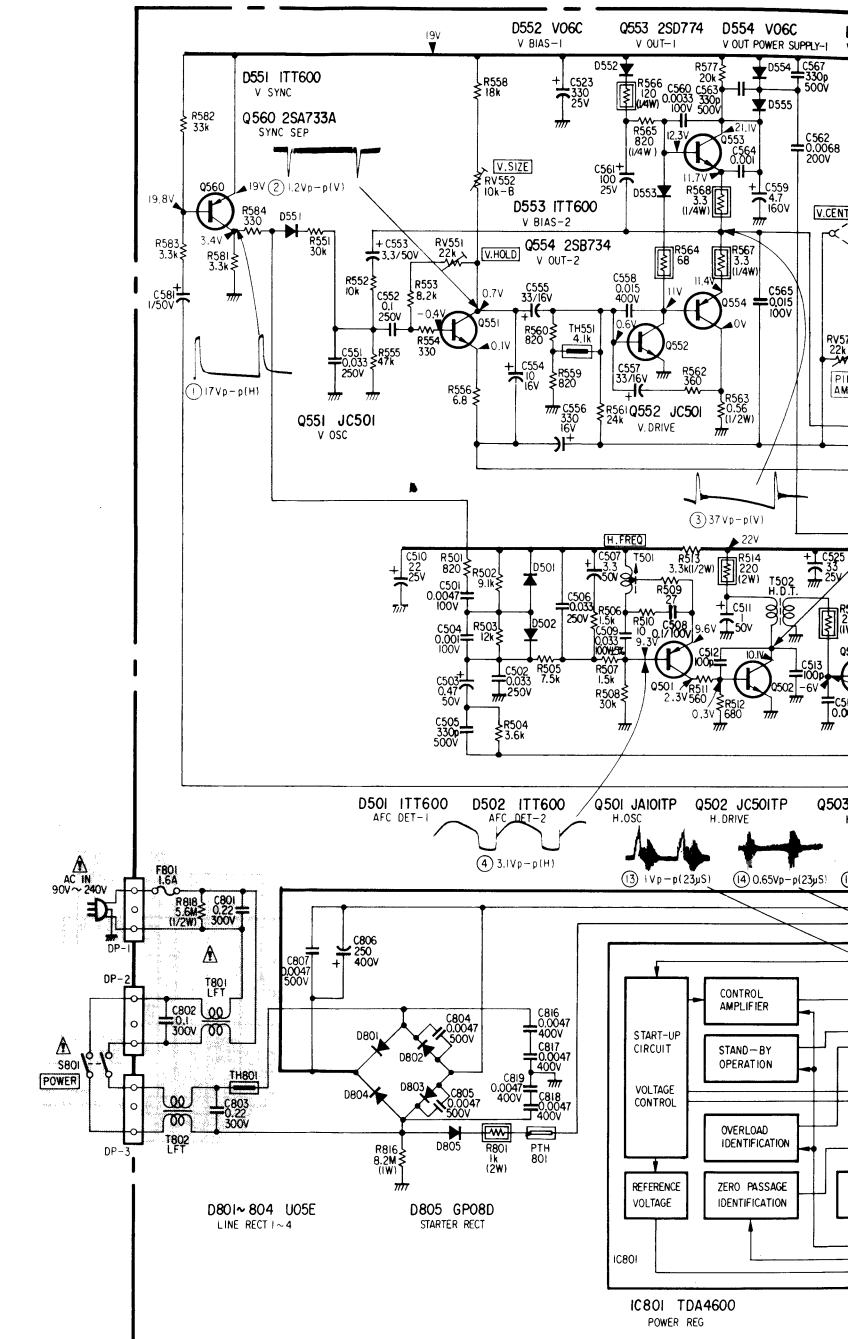
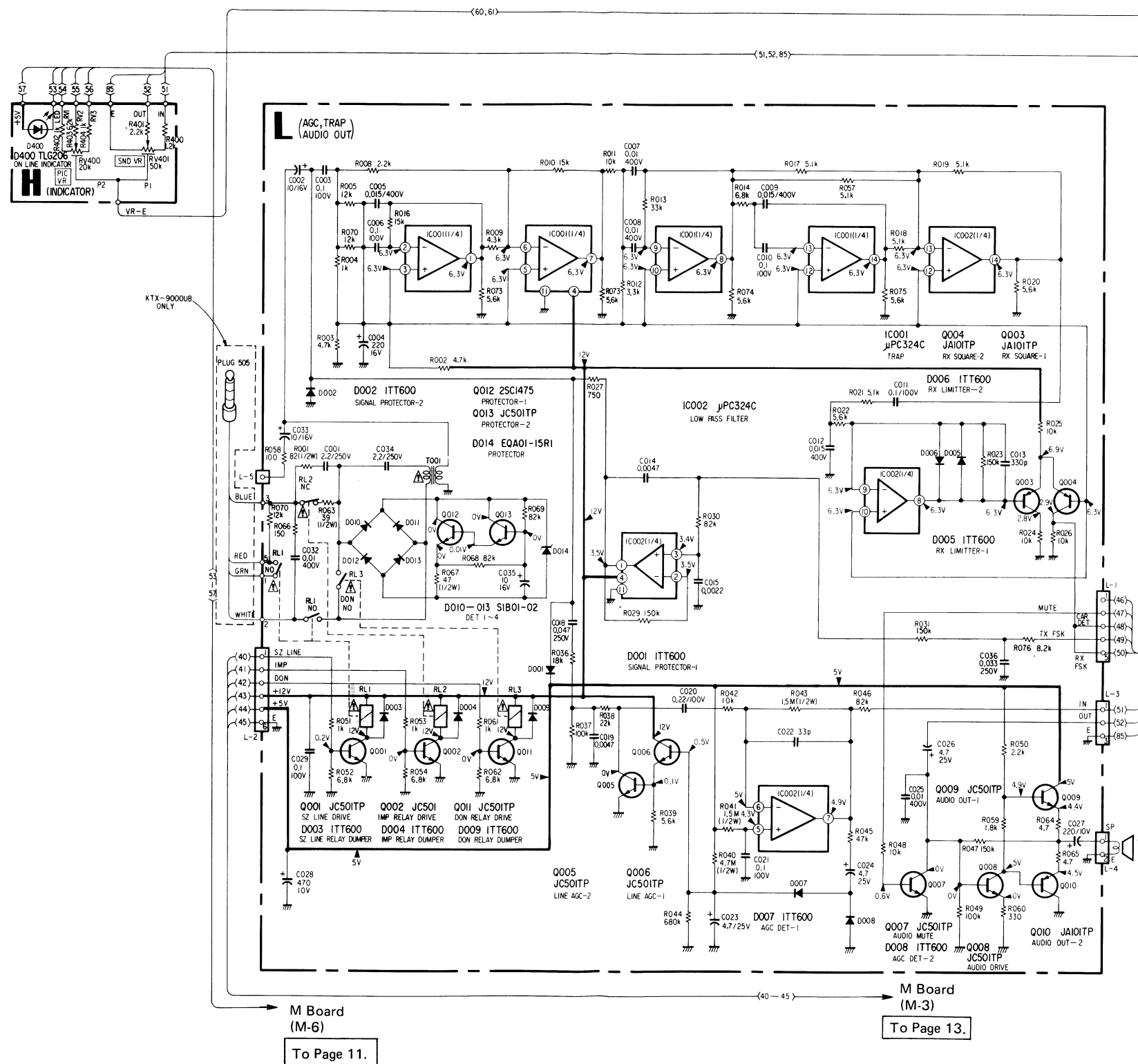


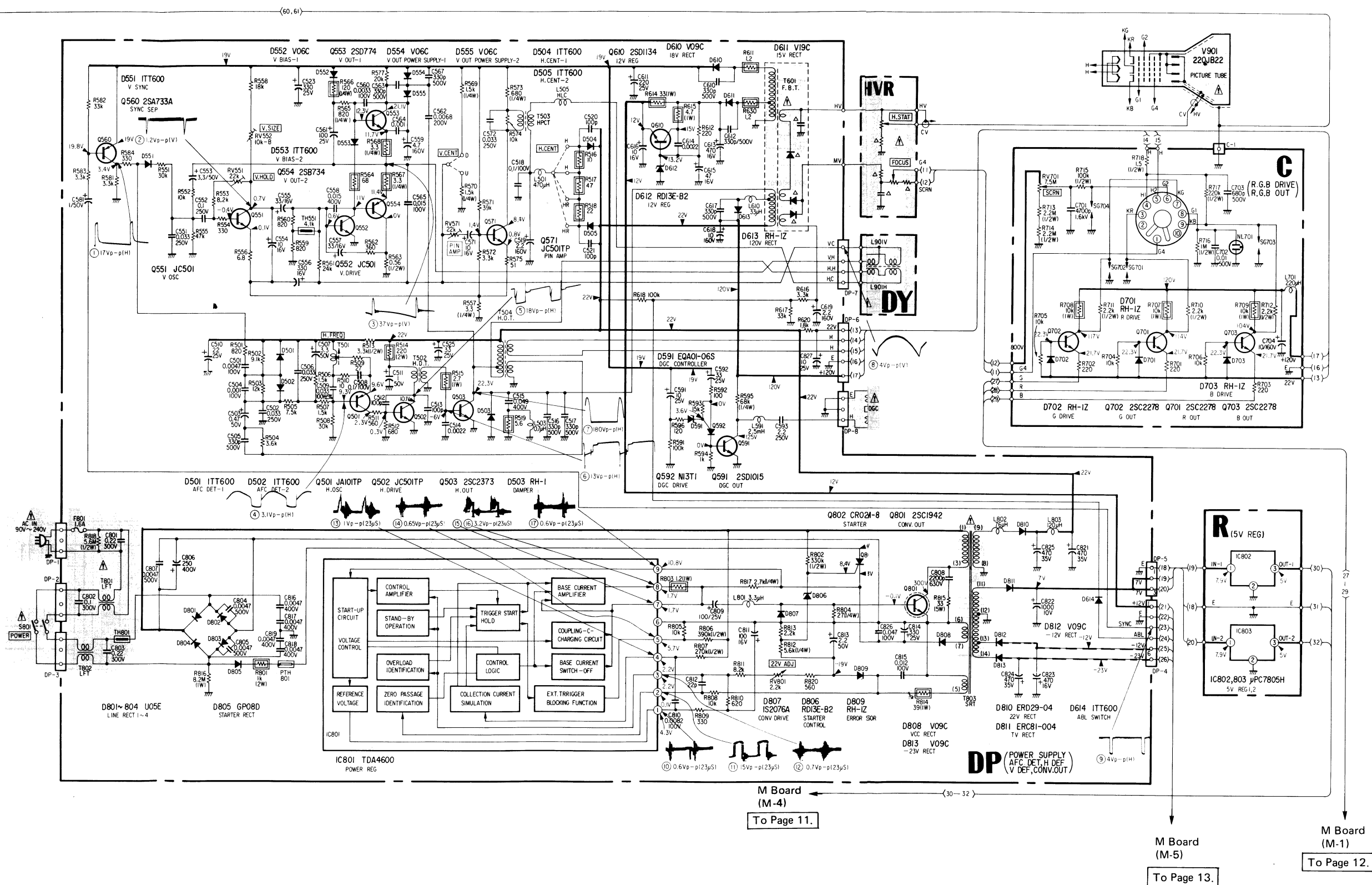


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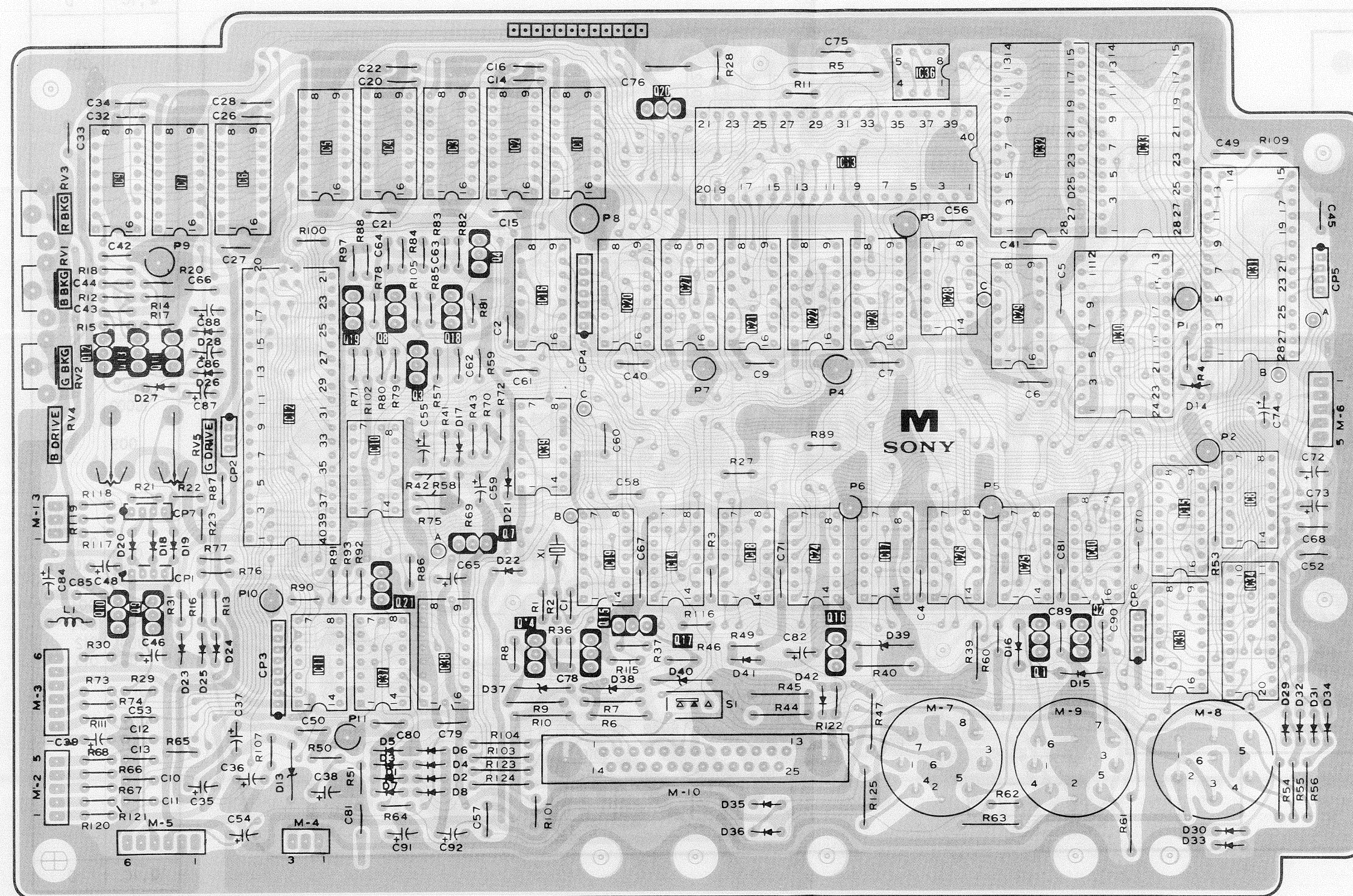
5





M

— M Board —



IC , Q	D	ADJ
IC36		
IC5 IC33		
IC4 20		
IC3		
IC2, IC1		
IC32		
IC9 IC13		
IC7		
IC6		RV3
IC31		
4		
IC16, IC20		
IC27, IC28		RV1
19 IC21, IC22		
8 IC23, IC30	28	
12, 13, 11		RV2
3	26	
	27 14	
IC12		
IC39	17	RV4
IC10		RV5
	21	
IC8		
IC15		
IC19		
7 IC14, IC40	20, 18, 19	
IC18, IC25		
IC17, IC24		
IC26		
21	22	
17 IC34		
10, 9 1, 2		
IC35	39 16	
14, 15, 16	23, 25, 24	
IC11	41 15	
IC37, IC38	40	
	37, 38	
	42	
	29	
	32, 31, 34	
	5, 6	
	13, 3, 4	
	1, 2	
	7, 8	
	35	
	36, 30	
	33	
IC , Q	D	ADJ

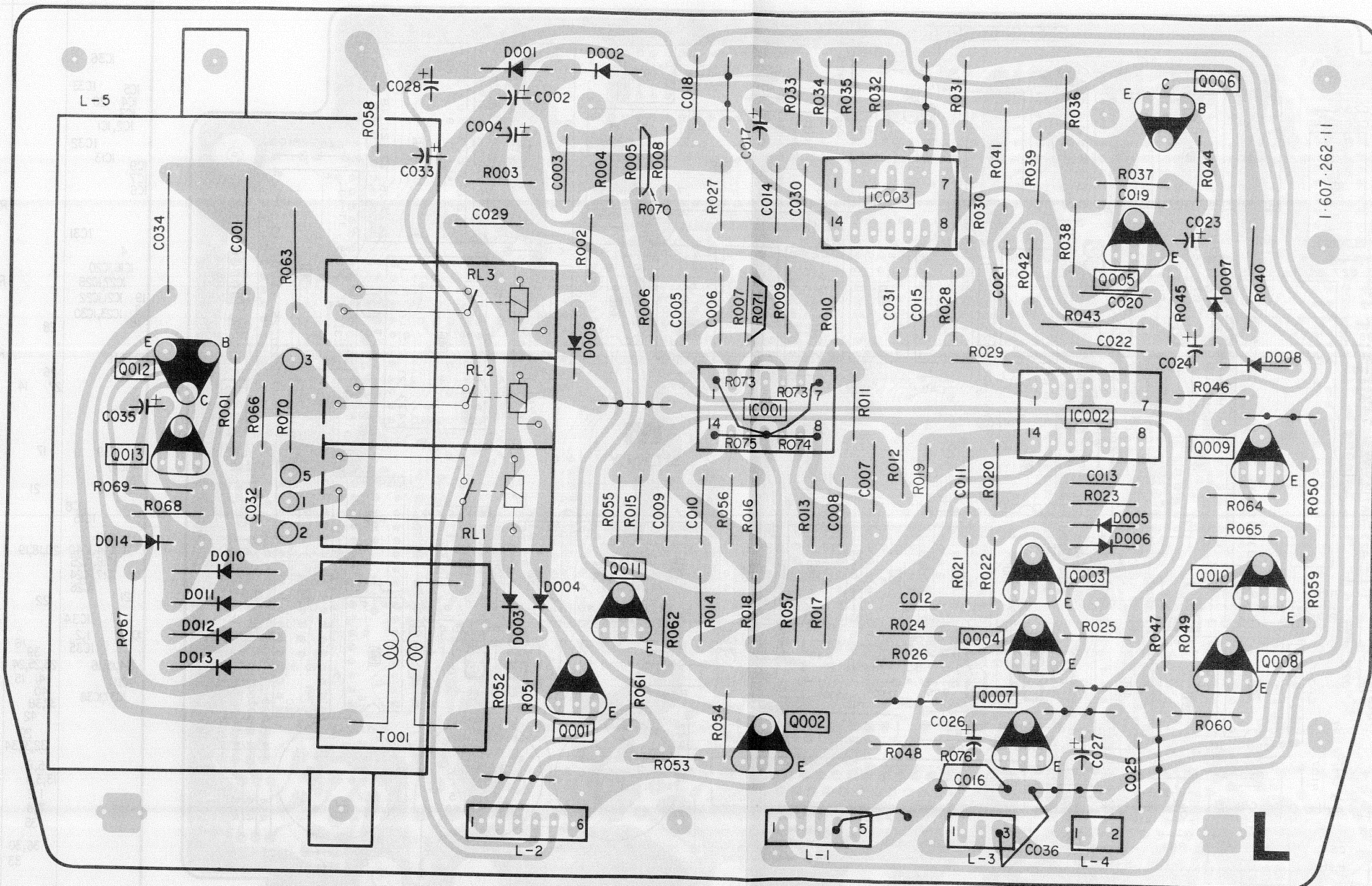
LINE AGC, AUTO DIAL, TRAP  
LINE ISOLATION, AUDIO OUT

L

L

ROW COLUMNS PERIPHERAL CONTROL  
MEMORY PROTECTOR TAPL CPU  
R 0.8 VIDEO DRIVE MC CONTROL DRAIN

- L Board -



Q, IC	D
	001 002
006	
005	
	007
	009 008
012 IC001 IC002	
009	
013	
	005 006
003 010	014 010 011
011	003 004
004 008	012 013
001	
002 007	
Q, IC	D